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HUNTINGTON BEACH ENERGY PROJECT

Preliminary Staff Assessment - Part A

CALIFORNIA
ENERGY COMMISSION
Edmund G. Brown Jr, Governor

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HUNTINGTON BEACH ENERGY PROJECT
(12-AFC-02)
PRELIMINARY STAFF ASSESSMENT – Part A

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EXECUTIVE SUMMARY

Felicia Miller

INTRODUCTION

This Preliminary Staff Assessment (PSA) is being published by the California Energy Commission staff for the Huntington Beach Energy Project (HPEB) and contains staff's independent, objective evaluation of the HBEP Application for Certification (12-AFC-2). The PSA is being published in two parts. This Part A contains includes staff's environmental and engineering evaluation of the following technical areas: **Biological Resources, Cultural Resources, Efficiency, Facility Design, Geology and Paleontology, Hazardous Materials, Land Use, Reliability, Socioeconomics, Soils and Water, Traffic and Transportation, Transmission System Engineering, Transmission Line Safety and Nuisance, Visual Resources, Waste Management, and Worker Safety and Fire Protection**. In addition, Part A includes **Introduction, Project Description, Compliance Conditions** and the **Executive Summary.**

Part B is scheduled to be published about 45 days from receipt of a Preliminary Determination of Compliance from the South Coast Air Quality Management District, and will include **Air Quality, Public Health and Alternatives** analyses**.** Generally, the PSA examines engineering, environmental, public health, and safety aspects of the proposed HBEP project, based on the information provided by the applicant, government agencies, interested parties, independent research and other sources available at the time the PSA was prepared. The PSA contains analyses similar to those normally contained in an Environmental Impact Report (EIR) required by the California Environmental Quality Act (CEQA). When issuing a license, the Energy Commission is the lead state agency under CEQA and its process is functionally equivalent to the preparation of an EIR.

The Energy Commission staff has the responsibility to complete an independent assessment of the project's engineering design and identify the potential impacts on the environment, the public's health and safety, and determine whether the project conforms to all applicable laws, ordinances, regulations and standards (LORS). Upon identifying any potentially significant environmental impacts, staff recommends mitigation measures in the form of conditions of certification for construction, operation and eventual closure of the project.

This PSA is not a decision document for these proceedings, nor does it contain findings of the Energy Commission related to environmental impacts or the project's compliance with local, state, and federal LORS. The PSA will serve as a precursor to the Final Staff Assessment (FSA). After allowing for a public comment period on this PSA, staff will prepare and publish a Final Staff Assessment that will serve as staff's formal testimony in evidentiary hearings to be held by the Energy Commission Committee assigned to hear this case. The Committee will hold evidentiary hearings and will consider the recommendations presented by the staff, applicant, intervenors, government agencies, and the public, prior to proposing its decision. The Energy Commission will make the final decision, including findings, after the Committee's publication of its proposed decision.

PROPOSED PROJECT LOCATION AND DESCRIPTION

The proposed HBEP would be developed by AES Southland Development, LLC on a 28.6 acre site located at 21730 Newland Street, just north of the intersection of the Pacific Coast Highway (PCH-Highway 1) and Newland Street. The site is privately owned land located in an industrial area of Huntington Beach, California and is relatively flat with an approximate elevation of 10 to 14 feet above mean sea level. The project borders a manufactured home/recreational vehicle park on the west, a tank farm on the north, the Magnolia Marsh wetlands on the north and east, and the Pacific Ocean and Huntington Beach State Park on the south and southwest.

The site is currently occupied by the existing and operational Huntington Beach Generating Station (HBGS), which would be demolished and replaced with the HBEP. The proposed HBEP would be built entirely within the footprint of the HBGS.

The project consists of two power blocks, each composed of three natural gas combustion turbine generators with supplemental fired heat recovery steam generators, a steam turbine generator, and air-cooled condenser. The project would have a generator ramping rate of up to 30 percent per minute, which allows it to rapidly respond to changes in generation and demand. Each power block would have the ability to generate power from 110 MW to 470 MW, could operate within a 70 to 100 percent load range, is designed to start and stop very quickly, and be able to quickly ramp up and down through a wide range of generating capacity. This fast start and fast stop capability allows for additional flexibility, as new renewable electrical resources are brought online.

The new HBEP facility would be air-cooled, eliminating the need for large quantities of once-through cooling seawater. The minimal potable water necessary for HBEP's construction, operational process and sanitary purposes would be provided by the city of Huntington Beach, which has provided a will-serve letter indicating there is sufficient supply of potable water to accommodate the HBEP. Alternative water sources, including potential use of reclaimed water to support the HBEP, were analyzed and determined to be infeasible. During operation, storm water and process wastewater would be discharged into a retention basin and then discharged to the ocean via the existing outfall. Discharge flows would substantially decrease compared to existing conditions due to decreased plant water use, and all discharges would meet ocean discharge standards. Sanitary wastewater would be conveyed to the Orange County Sanitation District through an existing sewer connection.

No offsite linear developments are proposed as part of this project. The HBEP would connect the nominal 936 MW of electricity through two overhead 230-kV generation ties connecting each power block to the existing onsite Southern California Edison (SCE) Ellis switchyard. Natural gas is delivered to the HBGS via an existing SoCalGas16-inch diameter line to an existing gas metering station. As part of the HBEP project, a new gas metering station and new gas pressure control station would be constructed.

CUMULATIVE PROJECTS

Staff conducted an extensive search of past, present, and reasonably foreseeable future projects in the area of the proposed project. Staff reviewed recent tracking information and available environmental reports and notices through various resources, including websites of local, regional and state jurisdictions. **Executive Summary - Table 1** below and **Executive Summary – Figure 1** presents a master list of the projects considered as part of the Huntington Beach Energy Project cumulative setting.

CEQA Guidelines define cumulative impacts as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.” (Cal. Code Regs., tit. 14, § 15355.) The Guideline continues: (a) “[t]he individual effects may be changes resulting from a single project or a number of separate projects” and (b) “[t]he cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.” (*Ibid*.)

Accordingly, staff in each technical section of this PSA determined which of the projects from the Cumulative Projects list could create impacts specific to their technical area. Using unique sets of criteria specific to each area, staff then evaluated whether the cumulative effect was significant, and if so, whether the project’s contribution to that combined effect would be “cumulatively considerable[1]”. Therefore, this PSA will identify and analyze the impacts of all aspects and phases of HBEP, including the combined effect the proposed project will have in conjunction with other projects.

Executive Summary - Table 1
HBEP Master List of Cumulative Projects

Projects referenced with a POINT					
LABEL ID	STATUS	PROJECT NAME	LABEL ID	STATUS	PROJECT NAME
1	Planned	Vans Skatepark	29	Planned	Former Wardlow School Site
2	Completed	Costco	30	Planned	Crown Castle Wireless Network (LAD051-12)
3	Planned	Huntington Beach Lofts	31	Planned	Uptown Newport Village Specific Plan Project
4	Foreseeable	The Village at Bella Terra	32	Foreseeable	Major Arterial Street Repairs FY 12-13
5	Planned	The Boardwalk (aka Murdy Commons)	33	Completed	The Strand
6	Planned	Archstone Residential Project	34	Planned	Pierside Pavilion Expansion
7	Planned	Edinger Walmart	35	Foreseeable	Pacific City
8	Planned	Mater Dei High School Parking Structure Project	36	Planned	Hilton Waterfront Beach Resort Expansion
9	Planned	Beach and Warner Mixed Use Project	37	Planned	Poseidon Desalination Plant
10	Foreseeable	Rancho Las Bolsas Affordable Housing	38	Foreseeable	Slurry Seal Program FY 12
11	Planned	Warner-Nichols Project	39	Foreseeable	Major Arterial Street Repairs FY

[1]”Cumulatively considerable” means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. (Cal.Code Regs., tit. 14, section 15064, subd. (h)(1).)

Projects referenced with a POINT					
LABEL ID	STATUS	PROJECT NAME	LABEL ID	STATUS	PROJECT NAME
					12-13
12	Planned	Harmony Cove	40	Planned	P2-92 Sludge Dewatering and Odor Control
13	Planned	Yakult USA Manufacturing Facility	41	Planned	Traffic Signal Rehab FY 12
14	Planned	Warner Avenue Bridge Preventative Maintenance Project	42	Planned	Traffic Signal Rehab FY 12
15	Planned	The Ridge	43	Foreseeable	Slurry Seal Program FY 12
16	Foreseeable	Goodell Property	44	Foreseeable	Dover/Peninsula Point Paving
17	Planned	Parkside Estates	45	Foreseeable	St. James Rd Sewer Relocation
18	Planned	Fountain Valley Civic Center Specific Plan	46	Foreseeable	Newport Blvd Modification
19	Planned	Gun Range EIR	47	Planned	City of Newport Beach General Plan Update EIR
20	Planned	The Met	48	Planned	Newport Beach City Hall Reuse Project
21	Planned	Hyundai Motor America Corporate Campus Project	49	Planned	Back Bay Landing Project
22	Planned	Huntington Beach Senior Center	50	Planned	Traffic Signal Rehab FY 12
23	Planned	Oceana Apartments	51	Foreseeable	Big Canyon/Port Streets Sewer
24	Planned	Beach and Ellis Project-Elan Apartments	52	Foreseeable	Balboa Yacht Basin Improvement
25	Planned	Well 6 Colored Water Treatment Plant	53	Planned	Bulkhead and Seawall Repairs
26	Planned	Crown Castle Wireless Network (LAD051-16)	54	Planned	Civic Center and Park Project
27	Planned	Former Lamb School Site	55	Foreseeable	Slurry Seal Program FY 12
28	Planned	Beach Walk	56	Foreseeable	China Cove/Little Balboa Beach

Projects referenced with a LINE					
LABEL ID	STATUS	PROJECT NAME	LABEL ID	STATUS	PROJECT NAME
1	Planned	Interstate 405 Improvement Project	8	Planned	Sidewalk, Curb & Gutter Replacement FY 12-13
2	Planned	Bristol Street Widening	9	Foreseeable	Fashion Island Striping
3	Planned	Warner Avenue Widening	10	Planned	Misc Paving Repairs
4	Planned	Misc Paving Repairs	11	Planned	Sidewalk, Curb & Gutter Replacement FY 12-13
5	Planned	Jamboree Pavement Rehab	12	Foreseeable	Abalone & Crystal Paving Rehab
6	Completed	Newland Street Widening	13	Completed	16th Street Pavement Overlay
7	Planned	Irvine Ave Reforestation	14	Foreseeable	Bay Avenue Pavement Rehab

Projects Referenced with a POLYGON					
LABEL ID	STATUS	PROJECT NAME	LABEL ID	STATUS	PROJECT NAME
1	Planned	Brightwater	4	Completed	Newland Street Residential (Pacific Shores)
2	Completed	Beach Boulevard/Edinger Corridors Specific Plan	5	Planned	Ascon Landfill Site
3	Foreseeable	Downtown Specific Plan Upgrade			

PROJECT PURPOSE AND OBJECTIVES

The HBEP would provide up to 939 MW of power generation capacity to the western Los Angeles Basin Local Reliability Area and replace the retiring Huntington Beach Generation Station (HBGS). The HBGS is scheduled to cease operation by

December 31, 2020 to comply with the California State Water Resources Control Board's (SWRCB) *Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling (policy).* This policy was adopted by the SWRCB on May 4, 2010*,* and regulates the use of seawater for power generation plants utilizing the once-through-cooled (OTC) method.

The proposed HBEP is an air-cooled, combined-cycle power generating facility that has been designed to start and stop very quickly and be able to ramp up and down, critical in supporting both local electrical reliability and grid stability – of particular importance following the retirement of the San Onofre Nuclear Generating Station – to support peak demand and meet resource adequacy requirements, as identified by the California Independent System Operator (California ISO).

The AFC describes the proposed HBEP project objectives as follows:

1. Provide efficient, reliable and predictable power supply by using combined-cycle, natural gas-fired combustion turbines to replace the OTC generation;
2. Support the local capacity requirements of Southern California's Western Los Angeles Basin;
3. Develop a 939 MW power generation plant that provides efficient operational flexibility with rapid-start and fast ramping capability to allow for efficient integration of renewable energy sources in the California electrical grid;
4. Reuse existing electrical, water, wastewater, and natural gas infrastructures and land to minimize terrestrial resource and environmental justice impacts by developing on an existing brown field site;
5. Site the project to serve the load area without constructing new transmission facilities; and
6. Site the project on property that has industrial land use designation with consistent zoning.

PUBLIC AND AGENCY COORDINATION AND OUTREACH EFFORTS

PUBLIC AND AGENCY NOTICE AND OUTREACH

On August 3, 2012, the Energy Commission staff sent a notice of receipt and a copy of the HBEP AFC to all local, state, and federal agencies that might be affected by the proposed project, and included information on how agencies that administer LORS that are applicable to the proposed project can comment and participate in the proceeding.

Additionally, on June 29, 2012, Energy Commission staff provided notices to property owners within 1,000 feet of the proposed site and within 500 feet of a linear facility (such as transmission lines, gas lines and water lines). These notices informed the public of the Commission's receipt and availability of the AFC, discussed the Energy Commission's siting certification process, provided information on how the public can comment and participate in the proceeding, as well as provided a brief description of the project, and a link to a Commission-maintained project website (http://www.energy.ca.gov/sitingcases/huntington_beach_energy/index.html).

LIBRARIES

On July 27, 2012, the Energy Commission staff also sent copies of the Huntington Beach Energy Project AFC to the following libraries:

Huntington Beach Public Library
7111 Talbert Avenue
Huntington Beach, CA 92648

Orange County Public Library HQ
1501 E Street Andrew Place
Santa Ana, CA 92705

Costa Mesa/Donald Dungan Library
1855 Park Avenue
Costa Mesa, CA 92627

Costa Mesa/Mesa Verde Library
2969 Mesa Verde Drive
Costa Mesa, CA 92626

Mary Wilson Library
707 Electric Avenue
Seal Beach, CA 90740

Fountain Valley Library
17635 Los Alamos
Fountain Valley, CA 92708

In addition to these local libraries, copies of the AFC were also made available at the Energy Commission's Library in Sacramento, the California State Library in Sacramento, as well as, state libraries in Eureka, Fresno, Los Angeles, San Diego, and San Francisco.

ENERGY COMMISSION'S PUBLIC ADVISER'S OFFICE

The Energy Commission's outreach program is also facilitated by the Public Adviser's Office (PAO). The PAO requested public service announcements at a variety of organizations, distributed notices informing the public of the Commission's receipt of the HBEP AFC, and invited the public to attend the Public Site Visit, Environmental Scoping Meeting and Informational Hearing on September 10, 2012 in Huntington Beach, California.

PUBLIC WORKSHOPS

Staff from the Energy Commission conducted two public workshops in Huntington Beach, CA to facilitate public, agency, and intervenor participation. These workshops allowed a transparent and comprehensive discussion of technical areas related to the proposed project. A Data Request and Response Workshop was held on November 14, 2012. During the workshop and scoping meeting, specific time for public participation was allocated, and public comments were taken. This workshop provided a public forum for the applicant, the intervenor, staff and participating agencies to interact regarding project issues.

CONSULTATION WITH LOCAL NATIVE AMERICAN COMMUNITIES

Energy Commission staff sent written correspondence to the Native American Heritage Commission, as well as to a number of Native American tribes who have expressed an interest in being contacted about development projects in the HBEP area. This correspondence served as an invitation for tribes to consult on the project.

RESPONSE TO COMMENTS

A number of individuals who did not file for intervenor status on the project, as well as one intervenor, one public organization and several public agencies (see **Executive Summary - Table 2** below) filed comments on the proposed project. Staff will address the concerns outlined in their letters either by responding directly to these comments within the PSA, or will respond to comments within the respective technical sections of the forthcoming Final Staff Assessment.

Executive Summary - Table 2
HBEP List of Agency/Intervenor Comments

NAME	DATE(S)	REQUEST TO PARTICIPATE	ALTERNATIVES	AIR / PUBLIC HEALTH	BIOLOGY / BOTANY / WILDLIFE	CUMULATIVE IMPACTS	GEOLOGICAL/SEISMIC	HAZARDOUS MATERIALS	HOURS OF OPERATION	INTAKE AND OUTFALL PIPELINES	NOISE /CONSTRUCTION	PROJECT DESCIPTION	SOCIECONOMICS	SOIL & WATER RESOURCES	TRAFFIC/LAND USE	VISUAL RESOURCES
Jason Pyle[2]	9/6/12, 11/16/12	x							x		x					
City of Huntington Beach	12/6/12			x	x		x	x	x		x	x	x	x	x	x
Coastal Commission	8/3/12, 1/23/13				x	x	x		x		x					
Huntington Beach Wetlands Conservancy	12/3/12				x						x					x
Orange County	12/12/12													x		
Santa Ana Regional Water Quality Control Board	12/10/12													x		
State Lands Commission	9/19/12									x						
USFWS	9/10/12			x	x						x			x		

ENVIRONMENTAL JUSTICE

California Statute, Section 65040.12 (c) of the Government Code, defines “environmental justice” to mean “fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies.” In light of the progress made by

[2] Mr. Pyle filed for Intervenor status on 9/6/12 (TN # 67029)

federal environmental agencies on environmental justice, the Energy Commission has examined federal guidelines pursuant to its desire to follow environmental justice principles for the environmental review of this project.

The steps recommended by the U.S. Environmental Protection Agency's (EPA's) guidance documents to assure compliance with Executive Order 12898 regarding environmental justice are:

- outreach and involvement;
- a screening-level analysis to determine the existence of a minority or low-income population; and
- if warranted, a detailed examination of the distribution of impacts on segments of the population.

Though the federal Executive Order and guidance are not binding on the Energy Commission, staff finds these recommendations helpful for implementing this environmental justice analysis.

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

- the minority population of the affected area is greater than 50 percent of the affected area's general population; or
- the minority population percentage of the area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

In addition to the demographic screening analysis, staff follows the steps recommended by the U.S. EPA's guidance documents in regard to outreach and involvement; and if warranted, a detailed examination of the distribution of impacts on segments of the population. Staff followed each of the above steps in the development of the PSA, considering potential impacts from HBEP on a potential environmental justice population. Staff determined that neither the construction nor operation of the proposed HBEP project would involve environmental impacts that could contribute to a disproportionate impact on an environmental justice population. Accordingly, no further environmental justice analyses are necessary (see **Socioeconomics Figure 1**).

SUMMARY OF PROJECT-RELATED IMPACTS

Based upon the information provided, discovery achieved and analyses completed to date, with exceptions described below, staff concluded that the project complies with all law, ordinances, regulations and standards (LORS), and with the implementation of its recommended mitigation measures described in the conditions of certification, potential environmental impacts of the HBEP project will be mitigated to levels of less than significant.

Executive Summary - Table 3
Summary of HBEP PSA Technical Analyses

TECHNICAL AREA	COMPLIES WITH LOCAL, STATE AND FEDERAL LORS	IMPACTS MITIGATED TO LEVEL BELOW SIGNIFICANT
Air Quality	PART B	PART B
Alternatives	PART B	PART B
Biological Resources	YES	YES
Cultural Resources	YES	YES
Efficiency	YES	YES
Facility Design	YES	YES
Geology and Paleontology	YES	YES
Hazardous Materials Management	YES	YES
Land Use	UNDETERMINED	UNDETERMINED
Noise and Vibration	YES	YES
Public Health	PART B	PART B
Reliability	YES	YES
Socioeconomic Resources	YES	YES
Soil & Water Resources	YES	YES
Traffic and Transportation	YES	YES
Transmission Line Safety/Nuisance	YES	YES
Transmission System Engineering	UNDETERMINED	UNDETERMINED
Visual Resources	UNDETERMINED	UNDETERMINED
Waste Management	YES	YES
Water Resources	YES	YES
Worker Safety / Fire Protection	YES	YES

Land Use - With the exception of exceeding the maximum allowable height, the project would be consistent with development standards of the Coastal Zone (CZ) Overlay District, the Public-Semipublic (PS) zone base zoning district, as well as other applicable provisions of the Municipal Code. Specific findings that public visual resources are preserved and enhanced where feasible are required to be made for a variance to exceed the maximum allowable height in the PS Zone. As staff does not believe the required findings can be made, approval of the project by the Commission may require an override.

Staff cannot make a recommendation whether the project meets the findings for a coastal development permit at this time. The California Coastal Commission is currently reviewing the project's conformity to relevant provisions of the California Coastal Act and the certified Local Coastal Program (LCP). California Coastal Commission staff has identified several issues of concern and anticipates providing a more thorough project evaluation as part of their review of this PSA.

Transmission System Engineering (TSE) – Staff received the California Independent System Operator (California ISO) Queue Cluster Phase I Interconnection Study on 9/30/13, but has not had adequate time to review the document and report its findings in the PSA. The Phase I Interconnection Study is required for staff to determine the potential need for downstream transmission facilities. Without the Phase I or Phase II Study, staff cannot determine if the proposed interconnection facilities, including the HBEP 230 kV switchyard, two 230 kV overhead generator tie-lines, and the termination at the Southern California Edison (SCE) Huntington Beach Switching Station, are adequate and in accordance with industry standards and good utility practices, as well as acceptable according to engineering laws, ordinances, regulations, and standards (LORS). Once staff has reviewed the Phase I Interconnection Study, they will report their analysis in the FSA.

Visual Resources – Staff has preliminarily identified significant visual resources impacts at Key Observation Point (KOP) KOP 4 and KOP 5. Additionally, the project site is in the state's Coastal Zone. Section 30251 of the California Coastal Act requires that the scenic and visual qualities of coastal areas be considered and protected as resources of public importance. Permitted development must be sited and designed to restore and enhance visual quality in visually degraded areas where feasible. Although the applicant and the City of Huntington Beach (City) are investigating visual screening concepts for the HBEP, as of publication of this preliminary staff assessment (PSA), the applicant has not yet proposed any specific, detailed, or enforceable measures to restore and enhance visual quality at the project site. Without a visual screening and enhancement plan, staff has insufficient information to assess consistency of the proposed project with many laws, ordinances, regulations, and standards (LORS) requiring visual enhancement and screening of development in the Coastal Zone. Assuming a visual screening plan for the HBEP will be developed and made available to staff, the final staff assessment (FSA) will assess whether such a plan would achieve compliance with applicable LORS. A conceptual visual screening plan would also be necessary to determine the extent to which significant visual resources impacts could be reduced for KOP 4 and KOP 5.

NOTEWORTHY PUBLIC BENEFITS

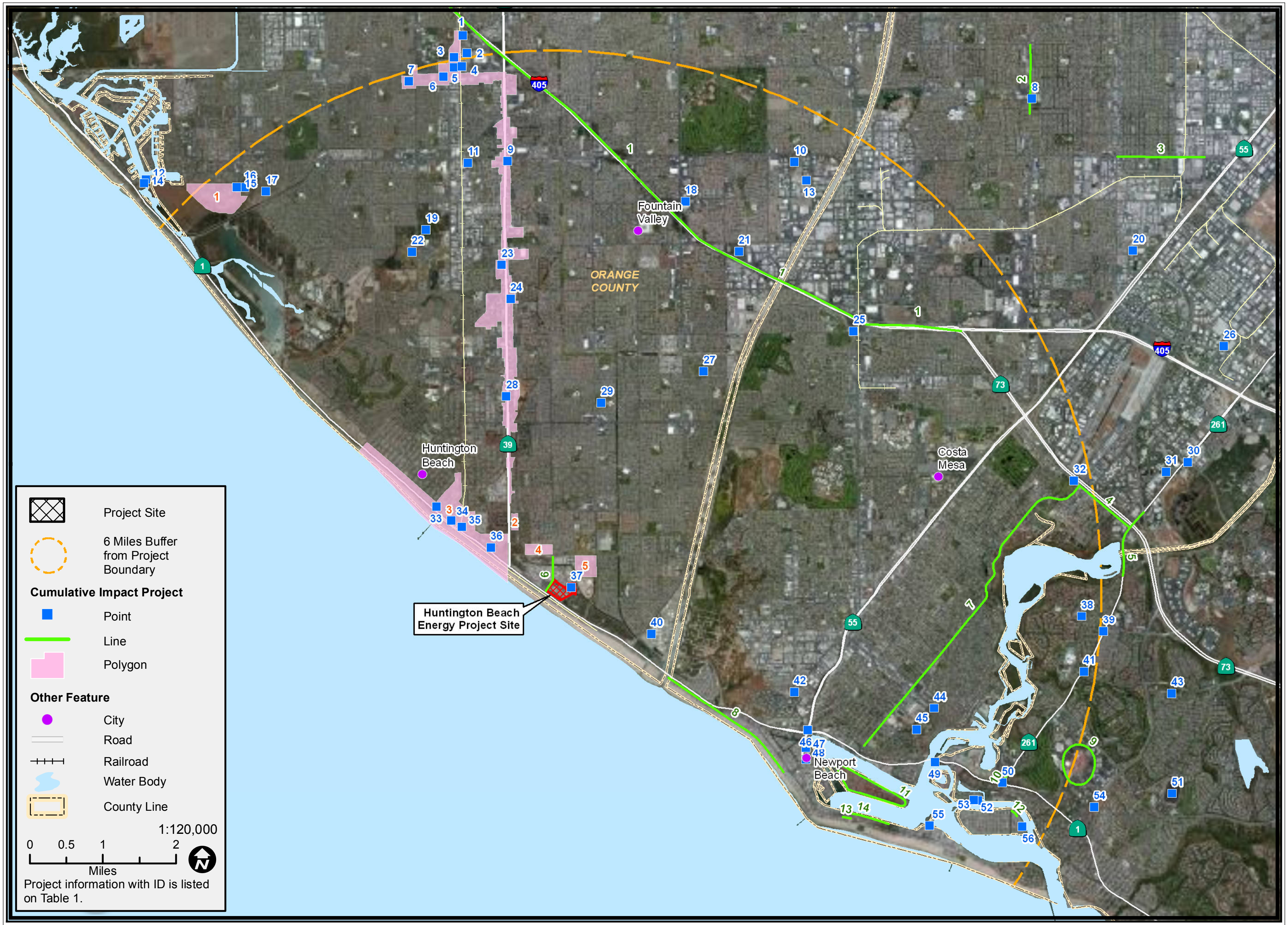
The proposed HBEP offers the following public benefits:

- with the closure of San Onofre Nuclear Generating Station, the HBEP would provide a critical role in replacement generation for southern California customers by providing support to both local electricity reliability and grid stability;
- eliminate the daily need for millions of gallons of ocean water, fish impingement, biological impacts associated with once-through cooling (OTC), and meet the California State Water Resources Control Board's retirement and replacement policy for OTC power plants;

- displace older and less efficient equipment with electric generating equipment that has been designed for rapid-start, fast-ramping capability, for efficient integration of a wide range of renewable energy generation;
- utilize existing electrical, water, wastewater, and natural gas infrastructures and land located in the Western Los Angeles basin load center without having to construct new or additional transmission facilities;
- minimize land resource impacts by developing on an existing brown field site and;
- socioeconomic benefits that would include both short term construction-related, and long term operational-related, increases in local expenditures and payrolls, as well as increased tax revenues.

EXECUTIVE SUMMARY - FIGURE 1

Huntington Beach Energy Project - Cumulative Impacts



EXECUTIVE SUMMARY

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: BLM, ESRI, Tele Atlas, Bing Aerial Image

INTRODUCTION

Felicia Miller

PURPOSE OF THIS REPORT

This Preliminary Staff Assessment (PSA) Part A is the California Energy Commission staff's independent analysis of the proposed Huntington Beach Energy Project (HBEP or project). This PSA is a staff document. It is neither a Committee document, nor a draft decision. The PSA describes the following:

- the proposed project;
- the existing environment;
- staff's analysis of 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;
- the potential cumulative impacts of the project in conjunction with other existing and known planned developments;
- mitigation measures proposed by the applicant, staff, interested agencies, local organizations, and intervenors which may lessen or eliminate potential impacts;
- staff's proposed conditions of certification (CoCs) under which the project should be constructed and operated, if it is certified; and
- project alternatives.

The analyses contained in this PSA are based upon information from the: 1) Application for Certification (AFC), 2) responses to data requests, 3) supplementary information from local, state, and federal agencies, interested organizations and individuals, 4) existing documents and publications, 5) independent research, and 6) comments at workshops. The PSA presents preliminary conclusions about potential environmental impacts and conformity with LORS, as well as proposed CoCs that apply to the design, construction, operation and closure of the facility. The analyses for most technical areas include discussions of proposed CoCs. The CoCs contain staff's recommended measures to mitigate the project's environmental impacts and to ensure conformance with LORS. Each proposed CoC is followed by a proposed means of "verification" to ensure the CoCs are implemented.

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

ORGANIZATION OF THE PRELIMINARY STAFF ASSESSMENT

The PSA contains the Executive Summary, Introduction, Project Description, and Project Alternatives. The next 20 chapters contain the environmental, engineering, public health and safety and alternatives analyses of the proposed project. These chapters are followed by a discussion of facility closure, project construction and operation compliance monitoring plans, and a list of staff that assisted in preparing this report.

Each of the 20 technical area assessments includes a discussion of:

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

ENERGY COMMISSION SITING PROCESS

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

The Energy Commission's siting regulations require staff to independently review the AFC, assess whether all of the potential environmental impacts have been properly identified, and whether additional mitigation or other more effective mitigation measures are necessary, feasible, and available (Cal. Code Regs., tit. 20, § 1742 and § 1742.5(a)). In addition, staff must assess the completeness and adequacy of the measures proposed by the applicant to ensure compliance with health and safety standards, and the reliability of power plant operations (Cal. Code Regs., tit. 20, § 1743(b)). Staff is required to develop a compliance plan (coordinated with other agencies) to ensure that applicable laws, ordinances, regulations, and standards are met (Cal. Code Regs., tit. 20, § 1744(b)).

Staff conducts its environmental analysis in accordance with the requirements of CEQA. No additional Environmental Impact Report (EIR) is required because the Energy Commission's site certification program has been certified by the Secretary of the California Natural Resources Agency as meeting all requirements of a certified regulatory program (Pub. Resources Code, § 21080.5 and Cal. Code Regs., tit. 14, § 15251 (j)). The Energy Commission is the CEQA lead agency.

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

Staff will provide a public comment period that follows the publication of the PSA. The comment period is also used to resolve issues between the parties and to narrow the scope of adjudicated issues in the evidentiary hearings. During this time, staff will conduct one or more workshops to discuss its conclusions, proposed mitigation, and proposed verification measures. Based on the workshop dialogue and any written comments received, staff may refine its analysis, correct any errors, and finalize CoCs to reflect any changes agreed to between the parties. These revisions and changes will be presented in a Final Staff Assessment (FSA) that will be published and made available to the public and all interested parties.

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

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

AGENCY COORDINATION

As noted above, the Energy Commission certification is in lieu of any permit required by state, regional, or local agencies and federal agencies to the extent permitted by federal law (Pub. Resources Code, § 25500). However, the Commission staff typically seeks comments from, and works closely with, other regulatory agencies that administer LORS that are applicable to proposed projects. The agencies associated with the HBEP include the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, California Coastal Commission, State Water Resources Control Board/Regional Water Quality Control Board, California Department of Fish and Wildlife, Caltrans, the California Air Resources Board, the South Coast Air Quality

Management District, the City of Huntington Beach and the Huntington Beach Fire Department.

OUTREACH

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

LIBRARIES

On July 27, 2012, Energy Commission staff sent the HBEP AFC to libraries in Huntington Beach, Santa Ana, Costa Mesa, Fountain Valley, Seal Beach, Eureka, Sacramento, Fresno, San Francisco, Los Angeles and San Diego.

INITIAL OUTREACH EFFORTS

The PAO reviewed related information available from the applicant and others and then conducted its own, extensive outreach efforts to identify certain local officials, as well as interested entities, within a five-mile radius around the proposed site for the HBEP. These entities include schools; churches; community, cultural and health-care facilities; day-care and senior-care centers, as well as business, environmental, governmental, and ethnic organizations. By means of e-mail and letters, the PAO notified these entities of the Informational Hearing and Site Visit for the project, held on September 10, 2012, at Huntington Beach Central Library in Huntington Beach.

The PAO also identified and similarly notified local officials with jurisdiction in the project area. Notices directed the public to the website for more information. In addition, the PAO placed notices in the August 30, 2012 issues of the Huntington Beach Independent and the Huntington Beach Wave newspapers announcing the Informational Hearing and Site Visit for this project.

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

ENVIRONMENTAL JUSTICE

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

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

California Statute section 65040.12(c) of the Government Code defines *environmental justice* to mean "fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies." Staff's specific activities, with respect to environmental justice for HBEP, are discussed in the **Executive Summary**.

PROJECT DESCRIPTION

Felicia Miller

INTRODUCTION

On June 27, 2012, AES Southland Development, LLC. submitted an Application for Certification (AFC) to the California Energy Commission (CEC) to construct, own, and operate the Huntington Beach Energy Project (HBEP). The HBEP would replace, and be constructed on 28.6 acres entirely within the footprint of, the existing and operating AES Huntington Beach Generating Station (HBGS)located in an industrial area of Huntington Beach, California at 21730 Newland Street, just north of the intersection of the Pacific Coast Highway (PCH-Highway 1) and Newland Street. The site is relatively flat with an approximate elevation of 10 to 14 feet above mean sea level. The project site borders a manufactured home/recreational vehicle site on the west, a tank farm on the north, the Magnolia Marsh wetlands on the north and east, and the Pacific Ocean and Huntington Beach State Park on the south and southwest.

The HBEP would be a natural gas-fired, combined-cycle, air-cooled, 939-megawatt (MW) electrical generating facility. No new offsite linear facilities are proposed as part of this project. **Project Description Figures 1A, 1B** and **2** shows the virtual and existing site appearance for the proposed project. **Project Description Figure 3** is the project site plan map.

HBEP would consist of two independently operating, three-on-one, combined-cycle gas turbine power blocks. Each power block would consist of three Mitsubishi natural gas-fired combustion turbine generators, three supplemental-fired heat recovery steam generators, one steam turbine generator, an air-cooled condenser, and related ancillary equipment. The project will have a generator ramping rate of up to 30 percent per minute, which allows it to rapidly respond to changes in generation and demand. Other equipment and facilities to be constructed and shared by both power blocks include natural gas compressors, water treatment facilities, emergency services, and administration and maintenance buildings.

PROJECT PURPOSE AND OBJECTIVES

The HBEP would provide up to 939 MW of power generation capacity to the western Los Angeles Basin Local Reliability Area and will replace the retiring Huntington Beach Generating Station. The HBGS is scheduled to cease operation by December 31, 2020 in compliance with the California State Water Resources Control's Board's (SWRCB) *Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling (policy).* This policy was adopted by the WRCB on May 4, 2010*,* and regulates the use of seawater for power generation plants utilizing the once-through-cooled (OTC) method.

The proposed HBEP is an air-cooled, combined-cycle power generating facility that has been designed to start and stop very quickly and be able to ramp up and down, critical in supporting both local electrical reliability and grid stability to support peak demand and meet resource adequacy requirements, as identified by the California Independent System Operator (California ISO).

On June 7, 2013, Southern California Edison (SCE) announced their decision to permanently retire Units 2 and 3 of the San Onofre Nuclear Generating Station (SONGS). The closure of SONGS places additional responsibility on SCE for replacement of over 2200 MW of electrical generation for southern California customers. The HBEP plays a critical role in replacement generation and reliability for southern California.

The proposed HBEP project objectives are as follows:

1. Provide efficient, reliable and predictable power supply by using combined-cycle, natural gas-fired combustion turbines to replace the OTC generation;
2. With the closure of SONGS, proposed facility provides replacement generation for southern California customers;
3. Eliminate use of ocean water for once-through-cooling;
4. Be able to support the local capacity requirements of Southern California's Western Los Angeles Basin;
5. Develop a 939 MW power generation plant that provides efficient operational flexibility with rapid-start and fast ramping capability to allow for efficient integration of renewable energy sources in the California electrical grid;
6. Reuse existing electrical, water, wastewater, and natural gas infrastructures and land to minimize land resource and environmental justice impacts by developing on an existing brown field site;
7. Site the project to serve the load area without constructing new transmission facilities; and
8. Site the project on property that has industrial land use designation with consistent zoning.

PROJECT FEATURES

The main project features would consist of a 28.6-acre power plant site, which will require both onsite and offsite laydown and construction parking. Approximately 22 acres of construction laydown will be required, and a maximum of 300 parking sites. The power plant, transmission lines, Southern California Edison (SCE) switchyard, and natural gas connection are located within the city of Huntington Beach within an area designated as Public, in which the Huntington Beach General Plan permits development of public utilities.

Project Description Figure 1A, shows the general arrangement and layout of the proposed facility. The **Visual Resources** section of this PSA includes a number of visual simulations of the proposed project, before and after construction.

The existing HBGS currently has five steam generating units (units 1, 2, 3, 4, and 5). Units 1 and 2 are currently operational; Units 3 and 4 are owned by Edison Mission Huntington Beach, LLC. Effective October 31, 2012, Units 3 and 4 ceased commercial operation, and the air emission credits transferred to the Walnut Creek Energy Park, a

500 MW generating facility located in City of Industry, California. On September 7, 2012 the California ISO approved a must-run contract on Units 3 and 4 to convert to synchronous condensers to provide voltage support to southern Orange County and San Diego in response to the the San Onofre Nuclear Generating Station units 2 and 3 being unavailable for the summer of 2013. A major amendment was approved by the Energy Commission on December 7, 2012, to convert Units 3 and 4 to synchronous condensers which will provide voltage support. Unit 5, a 133 MW peak demand facility, was retired in 2002.

The existing HBGS has various ancillary facilities that will remain in use to support HBEP. These facilities include the administration/warehouse building, SoCalGas natural gas pipeline interconnection and metering station, City of Huntington Beach potable water connection and the City of Huntington Beach sanitary sewer system.
Natural gas is delivered via an existing SoCalGas16-inch diameter line to an existing gas metering station. As part of the HBEP project, a new gas metering station and new gas pressure control station will be constructed by the project owner.

The project will use potable water for construction and operational processes and sanitary uses. The water delivered to the HBEP site is supplied from an existing 8-inch pipeline from the City of Huntington Beach into a 442,500 gallon service water/fire water storage tank. This water will be used as plant service water, irrigation water, makeup water to the combustion turbine inlet air evaporative coolers, and raw feed to the steam cycle makeup water treatment system. The City of Huntington Beach has provided a will-serve letter indicating there is sufficient supply of potable water to accommodate the HBEP. Alternative water sources, including potential use of reclaimed water, to support the HBEP were analyzed and determined to be infeasible.

Makeup water for the HBEP power blocks steam cycle will have contaminants removed by passing the service water through a reverse osmosis system followed by a continuous electrodeionization process.

Sanitary wastewater generated by the HBEP will be discharged to the City of Huntington Beach existing 4-inch sewer main that services the existing HBGS. HBEP process wastewater and site storm water will be collected in an onsite retention basin then discharged to the Pacific Ocean via an existing outfall which services the existing HBGS.

The 442,500 gallon service water/fire water storage tank will provide approximately 35 hours of operational storage and 2 hours of fire protection storage in the event of a disruption in water supply. The existing fire water distribution system, including two emergency diesel-fired fire water pumps, storage tanks and piping, will remain in service as part of the fire protection system, but will be modified to meet all LORS for the HBEP and to accommodate the newly constructed facilities.

The construction laydown areas consist of 6 acres at the HBGS and 16 acres at the AES Alamitos Generating Station (AGS) in Long Beach, which will be used for component storage only; no assembly of components will take place at the AGS site. During construction, the large components will be hauled from the construction laydown area at the AGS site to the HBEP site as they are ready for installation.

Construction and demolition parking will be provided by a combination of onsite and offsite parking. A maximum of 300 parking spaces will be required during construction and demolition activities. Approximately 1.5 acres (130 parking spaces) will be provided onsite, 3 acres (300 parking spaces) adjacent to HBEP across Newland Street, 2.5 acres (215 parking spaces) at the corner of PCH and Beach Boulevard, 225 parking spaces at the City of Huntington Beach shore parking, and 1.9 acres (170 parking spaces) at the Plains All American Tank Farm on Magnolia Street.

Two 230-kilovolt (kV) transmission interconnections will connect HBEP power blocks 1 and 2 to the existing onsite SCE Ellis switchyard.

PROJECT DEMOLITION AND CONSTRUCTION SCHEDULE

Demolition and construction of the HBEP will commence in phases to allow continued operation of existing power generation and voltage units to maintain a minimum generating capacity of at least 430 MW of power delivery and grid reliability. Construction of HBEP Power Blocks 1 and 2 will be coordinated with the operation and demolition of the existing HBGS Units 1, 2, 3, 4, and 5 and are contingent on permitting and CPUC-approved power purchase agreements.

HBEP construction will require the removal of the existing HBGS Units 3, 4, and 5 and existing fuel storage tanks. Initial demolition begins with Unit 5, the fuel storage tanks and the stack for Unit 3 and 4 to provide the space for Power Block 1. Once Power Block 1 is operational, the synchronous condenser will cease operation and the remainder of units 3 and 4 will be demolished. The demolition of Units 3 and 4 are not part of this certification process, as Units 3 and 4 were licensed through the CEC (00-AFC-13C) and demolition is authorized under that license. Power Block 2 will be constructed on the footprint of the demolished Units 3 and 4. Once Bower Block 2 is operational, the remaining HBGS Units 1 and 2 will be demolished. The construction of the control and maintenance buildings (buildings 33 and 34) is scheduled to occur during the last 14 months of the demolition of Units 1 and 2. Power Block 1is scheduled for commercial operation Q4 2018, or Q1 2019; Power Block 2 scheduled for commercial operation Q2 or Q3 2020.The construction and demolition would be scheduled over approximately a 7-year period as shown in **Project Description Table 1.**

Project Description - Table 1
Demolition / Construction Activity

DEMOLITION / CONSTRUCTION ACTIVITY	TIMELINE
Demolish Unit 5, fuel tanks and Units 3 & 4 stack	Q1 2015 – Q2 2016 15 months
Construction Power Block 1	Q3 2016 – Q4 2018 30 months
Commercial Operation Power Block 1	Q4 2018 or Q1 2019
Demolish Units 3, 4	Q1 2016 – Q1 2018 27 months
Construction Power Block 2	Q3 2018 – Q2 2020 28 months
Commercial Operation Power Block 2	Q2 or Q3 2020
Demolish Units 1, 2	Q4 2020 – Q3 2022 24 months
Construction of buildings 33, 34	Q3 2021 – Q3 2022 14 months

NOTEWORTHY PUBLIC BENEFITS

The California ISO has recognized the importance of the existing HBGS location in providing energy and contingency reserve for the Western Los Angeles Basin Local Reliability Area and northern San Diego County. Specifically, this location serves Orange County by providing essential electrical service to the existing SCE Ellis substation through a dedicated 230-kilovolt (kV) transmission line connection. If approved by the Energy Commission, the HBEP will ensure the long-term viability of this existing critical generating location and will provide essential electrical service to the residents of Orange County and Huntington Beach. HBEP's quick-start peaking electric generation capacity will meet peak demand and resource adequacy requirements as identified by AB 380 (Resource Adequacy) and the California ISO.

The proposed HBEP will be air cooled, eliminate the use of OTC and the use of seawater currently being used at the HBGS, which is scheduled to retire by December 31, 2020. This will eliminate the use of ocean water at the power plant site and will eliminate the potential impacts to marine life through impingement and entrainment in an OTC system. In addition, the proposed HBEP will result in a substantial reduction in fresh water usage, using 20% of the fresh water used by the existing HBGS.

The HBEP will be located entirely within the footprint of the existing HBGS site, which will result in avoiding the need to construct new linear facilities, including gas and water supply lines, discharge lines and transmission interconnections. Siting the HBEP on the HBGS site is consistent with existing zoning regulations, and will result in reducing potential offsite environmental impacts, the cost of construction, and ensures no new site is converted to industrial use.

The design of the proposed HBEP is a smaller footprint and lower profile than the existing HBGS, which will be an improvement to the aesthetic quality of the project. Removal of an assemblage of structures, tanks, and cooling tower and replacement with project elements that are shorter and set back further to the north of the PCH will reduce some of the existing visual conditions. HBEP will utilize an existing power generation site with a General Plan Land Use designation of Public and a zoning designation of Public-Semipublic., consistent zoning, and electrical, water, wastewater, and natural gas infrastructure in place. Retiring the once-through cooling system would minimize potential offsite environmental impacts, and the project would eliminate the need for a new site to be converted to Public-Semipublic use. In addition, the HBEP will replace an older, dirtier and less efficient power generation plant with a cleaner, more efficient power generation plant.

PROJECT DESCRIPTION - FIGURE 1A

Huntington Beach Energy Project - Conceptual Drawing

PROJECT DESCRIPTION - FIGURE 1B

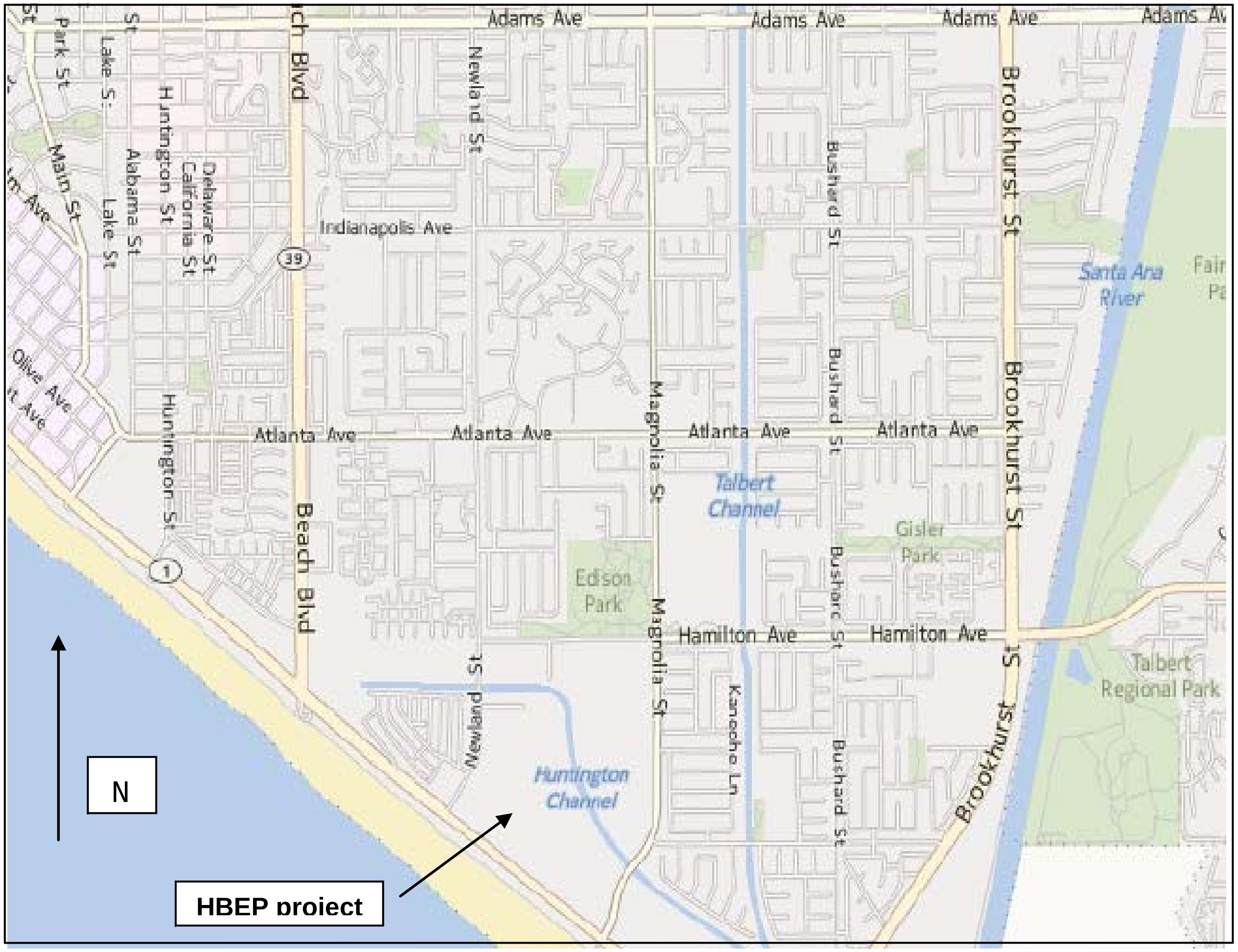
Huntington Beach Energy Project - Conceptual Drawing

PROJECT DESCRIPTION - FIGURE 2

Huntington Beach Energy Project - Current View

PROJECT DESCRIPTION - FIGURE 3

Huntington Beach Energy Project - Site Plan Map



Environmental Assessment

BIOLOGICAL RESOURCES

Anwar Ali, Heather Blair, and Jennifer Lancaster

SUMMARY OF CONCLUSIONS

The proposed Huntington Beach Energy Project (HBEP) is a natural-gas-fired electrical generating facility that would replace, and be constructed on the site of, the existing Huntington Beach Generating Station, an operating power plant in Huntington Beach, California. The proposed power plant site and offsite laydown area are industrial sites and vegetation is limited to weedy species and landscaping. Rare plants and special-status wildlife are not expected to occur onsite; however, nearby marshes and other natural areas support special-status birds including the Belding's savannah sparrow (state-listed endangered), light-footed clapper rail (federally and state-listed endangered), western snowy plover (federally listed threatened), California least tern (federally and state-listed endangered), and California brown pelican (state fully protected). Another sensitive wildlife receptor is the Wildlife Care Center, which houses rehabilitating birds and wildlife in open air enclosures approximately 25 feet southwest of the proposed HBEP site and the existing Huntington Beach Generating Station.

Given the proximity of the proposed project to the aforementioned biological resources, construction and operation of the proposed project would result in various direct and indirect effects. At this time, staff is able to conclude that with implementation of proposed conditions of certification, compliance with most laws, ordinances, regulations, and standards would be achieved and most direct, indirect, and cumulative impacts would be avoided, minimized, or mitigated to less than significant levels (refer to **Biological Resources Table 3** for a summary of the proposed project's impacts, applicable conditions of certification and determination of significance). However, without further information/analysis/coordination staff is unable to make a conclusion regarding the following issues:

- **Construction and demolition noise impacts to special-status birds and rehabilitating wildlife.** Construction and demolition noise would result in significant impacts to special-status birds in marshes near the HBEP, especially in the adjacent Upper Magnolia and Magnolia marshes, as well as rehabilitating wildlife at the Wildlife Care Center. Staff is requesting that the applicant select several noise reduction measures and provide updated construction and demolition noise modeling that assumes implementation of these measures. In addition, staff is requesting an ambient noise survey at the Wildlife Care Center to establish a baseline at this sensitive receptor. Staff will analyze these data to determine whether construction and demolition noise impacts can be mitigated and compliance with LORS, including the federal and state endangered species acts, can be achieved.
- **Operation noise impacts to rehabilitating wildlife.** Operation noise at the Wildlife Care Center may result in significant impacts to rehabilitating wildlife. To assess impacts, staff is requesting an ambient noise survey as described above. Staff is also requesting operation noise modeling at the Wildlife Care Center that assumes implementation of noise reduction measures in staff's proposed Condition of Certification **NOISE-4**. Staff will analyze these data to determine whether operation noise impacts are significant and can be mitigated.

- **Nitrogen deposition impacts to sensitive habitats.** Emissions from operation of the proposed project would result in nitrogen deposition at sensitive habitats, potentially including critical habitat for western snowy plover, San Diego fairy shrimp, and California gnatcatcher. The applicant is currently revising its responses to Data Requests 23-26 using the new meteorological dataset for the dispersion modeling as recommended by South Coast Air Quality Management District to quantify project specific and cumulative nitrogen deposition. Staff will analyze this information to determine whether nitrogen deposition impacts are significant, and whether such impacts can be mitigated and compliance with LORS achieved.

INTRODUCTION

This section of the Preliminary Staff Assessment provides the California Energy Commission (Energy Commission) staff's analysis of potential impacts to biological resources from the construction, demolition, and operation of the proposed Huntington Beach Energy Project (HBEP).

This analysis addresses potential impacts to special-status species, wetlands and other waters of the U.S., and areas of critical biological concern. Information contained in this document includes a detailed description of the existing biotic environment, an analysis of potential impacts to biological resources and, where necessary, specifies mitigation measures (conditions of certification) to reduce impacts to less than significant levels. Additionally, this analysis assesses compliance with applicable laws, ordinances, regulations, and standards (LORS).

This analysis is based, in part, on information provided in the HBEP Application for Certification (AFC; HBEP 2012a), Data Adequacy Supplement (HBEP 2012b), responses to staff and interveners data requests (HBEP 2012c; 2012d; 2013a; 2013b; 2013c), staff's observations during site visits of the proposed HBEP on September 28, 2012 and September 17, 2013; discussion at the data response workshop on November 14, 2012; and ongoing communications with the California Department of Fish and Wildlife (CDFW), and the U.S. Fish and Wildlife Service (USFWS).

Compliance with Laws, Ordinances, Regulations, and Standards

The applicant must comply with the LORS listed in **Biological Resources Table 1** during project construction, demolition and operation.

Biological Resources Table 1
Laws, Ordinances, Regulations, and Standards

Applicable Law	Description
Federal	
Endangered Species Act (Title 16, United States Code, section 1531 et seq., and Title 50, Code of Federal Regulations, part 17.1 et seq.)	Designates and provides for protection of threatened and endangered plant and animal species, and their critical habitat. Take of federally listed species as defined in the Act is prohibited without incidental take authorization, which may be obtained through Section 7 consultation (between federal agencies) or Section 10 Habitat Conservation Plan. The administering agencies are the USFWS and National Marine Fisheries Service.

Applicable Law	Description
Clean Water Act (Title 33, United States Code, sections 1251 through 1376, and Code of Federal Regulations, part 30, section 330.5(a)(26))	Requires the permitting and monitoring of all discharges to surface water bodies. Section 404 requires a permit from the U.S. Army Corps of Engineers (USACE) for a discharge from dredged or fill materials into Waters of the U.S., including wetlands. Section 401 requires a permit from a regional water quality control board (RWQCB) for the discharge of pollutants.
Migratory Bird Treaty (Title 16, United States Code, sections 703 through 711)	Makes it unlawful to take or possess any migratory nongame bird (or any part of such migratory nongame bird including nests with viable eggs). The administering agency is the USFWS.
Fish and Wildlife Coordination Act (Title 16, United States Code, section 661 et seq.)	Requires federal agencies to coordinate federal actions with the USFWS to conserve fish and wildlife resources. The administering agency is the USFWS.
State	
California Endangered Species Act of 1984 (Fish and Game Code, sections 2050 through 2098)	Protects California's rare, threatened, and endangered species. The administering agency is CDFW.
California Code of Regulations (Title 14, sections 670.2 and 670.5)	Lists the plants and animals of California that are declared rare, threatened, or endangered. The administering agency is CDFW.
Fully Protected Species (Fish and Game Code sections 3511, 4700, 5050, and 5515)	Designates certain species as fully protected and prohibits the take of such species or their habitat unless for scientific purposes (see also Title 14, California Code of Regulations, section 670.7). The administering agency is CDFW.
Nest or Eggs (Fish and Game Code section 3503)	Protects California's birds by making it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. The administering agency is CDFW.
Migratory Birds (Fish and Game Code section 3513)	Protects California's migratory birds by making it unlawful to take or possess any migratory nongame bird as designated in the Migratory Bird Treaty Act or any part of such migratory nongame birds. The administering agency is CDFW.
Lake and Streambed Alteration Agreement (Fish and Game Code sections 1600 et seq.)	Regulates activities that may divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake in California designated by CDFW in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit. Impacts to vegetation and wildlife resulting from disturbances to waterways are also reviewed and regulated during the permitting process. The administering agency is CDFW.

Applicable Law	Description
California Coastal Act (Public Resources Code, sections 30000 et seq.)	The California Coastal Act of 1976 establishes a comprehensive scheme to govern land use planning along the entire California coast. The Coastal Act sets forth general policies (§30200 et seq.) which govern the California Coastal Commission's review of permit applications and local plans. Specific to energy facilities, the Coastal Act requires that the Coastal Commission designate specific locations within the coastal zone where the establishment of a thermal power plant subject to the Warren-Alquist Act could prevent the achievement of the objectives of the Coastal Act (30413(b)). Section 30231 of California Coastal Act requires actions that minimize adverse impacts to biological productivity of coastal waters. Such actions may include: the control of run-off, minimization of discharge and entrainment, prevention of interference with surface water flow (and streams), prevention of groundwater depletion, use of wastewater reclamation, and maintenance of natural vegetation in buffer areas that protect riparian habitats. Section 30240 of the Coastal Act mandates protection of environmentally sensitive habitats from the degradation of habitat value. The administering agency is the California Coastal Commission.
California Food and Agriculture Code, section 403	The California Department of Food and Agriculture is the state agency designated to prevent the introduction and spread of injurious insect or animal pests, plant diseases, and noxious weeds.
Porter-Cologne Water Quality Control Act	Regulates discharges of waste and fill materials to waters of the state, including "isolated" waters and wetlands.
Local	
City of Huntington Beach General Plan/Local Coastal Program/Coastal Element	The Conservation and Open Space and Land Use Elements of the General Plan direct the city of Huntington Beach to evaluate the compatibility of proposed development projects with the preservation of biological resources and open space. As a condition of development adjacent to environmentally sensitive habitats delineated in the General Plan, and for development in the coastal zone adjacent to environmentally sensitive habitats identified in the Local Coastal Program, a minimum buffer of 100-feet from the edge of habitat shall be established.
City of Huntington Beach Noise Ordinance (City of Huntington Beach Municipal Code Chapter 8.40)	Designates noise zones, establishes exterior noise standards, and defines exterior noise levels that are prohibited except under permit.

SETTING

PROJECT OVERVIEW

The proposed HBEP is a natural-gas-fired, combined-cycle, air-cooled, 939-megawatt (MW) electrical generating facility that would replace, and be constructed on the site of, the AES Huntington Beach Generating Station, an existing and operating power plant in Huntington Beach, California. The HBEP would consist of two independently operating, combined-cycle gas turbine power blocks. Equipment and facilities to be constructed and shared by both power blocks include natural gas compressors, water treatment facilities, emergency services, and administration and maintenance buildings. The project would be constructed on 28.6 acres entirely within the footprint of the existing Huntington Beach Generating Station. HBEP construction would require the removal of the existing Huntington Beach Generating Station Units 1, 2, 3, 4, and 5. Construction of the new HBEP and demolition of the existing units would occur over nine years.

The HBEP would reuse existing onsite potable water, natural gas, stormwater, process wastewater, and sanitary pipelines and electrical transmission facilities. No offsite linear developments are proposed as part of the project. The new generating units would use air-cooled condensers and would eliminate the use of ocean water for cooling, which is currently used for the existing Huntington Beach Generating Station units. During HBEP operation, stormwater and process wastewater would be discharged to a retention basin and then ultimately to the Pacific Ocean via an existing outfall. Sanitary wastewater would be conveyed to the Orange County Sanitation District via the existing city of Huntington Beach sewer connection. Two, 230-kilovolt (kV) transmission interconnections would connect both HBEP power blocks to the existing Southern California Edison (SCE) 230-kV switchyard that is located on a separate parcel within the existing Huntington Beach Generating Station site.

HBEP construction would require 22 acres of both onsite and offsite laydown and construction parking areas. Approximately 6 acres would be onsite and used for a combination of laydown and construction parking, and 16 acres would be offsite, approximately 13 miles north of HBEP at the existing Alamitos Generating Station and used for construction laydown.

REGIONAL SETTING

The regional setting of the proposed project encompasses the area within 10 miles of the HBEP and 10 miles of the offsite laydown area. The proposed HBEP site lies within the Los Angeles Plain subsection of the Southern California Coast Section (USDA 1997), which is characterized by flat floodplains and terraces and very gently sloped alluvial fans with small areas of marine terraces. Land use proximate to the proposed project area primarily includes urban development, industrial areas, the ASCON landfill, parklands and open space, and wetlands preserves.

The HBEP site is located immediately northeast of the Pacific Coast Highway (Highway 1) and east of Newland Street on the site of the operational Huntington Beach Generating Station. It is bounded on the west by a manufactured home/recreational vehicle park, on the north by a tank farm, on the north and east by the Huntington Beach Channel and residential areas, on the east and southeast by the Huntington

Beach Wetland Preserve/Magnolia Marsh wetlands, and to the south and southwest by the Huntington Beach State Park and the Pacific Ocean. The Huntington Beach Wetlands Conservancy offices and the Wetlands and Wildlife Care Center are adjacent to the southwest boundary of the site, between the Huntington Beach Generating Station and Highway 1. The Santa Ana River (channelized) is located approximately 1.3 miles southeast of the proposed HBEP. The site is located on a gently sloping coastal plain.

Extensive urban development throughout the region has replaced most of the natural communities which are restricted to scattered open space preserves and other protected areas.

Regional Wetlands and Other Protected Areas

Several important ecological reserves, wetland preservation sites, and designated open spaces occur in the region. These protected areas represent some of the best remaining habitat in the region and provide important habitat for migratory birds along the Pacific Flyway as well as habitat for several special-status plants and animals. Following is a brief description of each of these areas (excerpted from HBEP 2012a and verified by staff):

Huntington Beach Wetlands Conservancy's Coastal Marsh Restoration Complex

The Huntington Beach Wetlands Conservancy (Conservancy) has been actively restoring coastal wetland habitats along the Talbert Channel and Huntington Beach Channel since 1989. The wetland restoration in this area includes four units: Newland Marsh, Magnolia Marsh (including Upper Magnolia Marsh), Brookhurst Marsh, and Talbert Marsh. Collectively these areas encompass approximately 193 acres. Primary habitats include coastal salt marsh, open water, and salt panne. Restoration of these areas began with the removal of the seaward levee of the Huntington Beach Flood Control Channel to restore tidal influence into the Talbert and Brookhurst Marshes. Restoration of the Magnolia Marsh site began in April of 2009 and involved excavation of 40,000 cubic yards of fill to recreate historical tidal channels. The restoration work in Magnolia Marsh was completed in February 2010. The Conservancy's Coastal Marsh Restoration Complex is adjacent to the HBEP; Upper Magnolia Marsh is located immediately east, and Magnolia Marsh is located immediately southeast of the proposed site. Several special-status wildlife species have been reported or observed in these wetlands. The wetland complex supports a breeding population of Belding's savanna sparrow's (*Passerculus sandwichensis beldingi*), a state listed endangered species. Light-footed clapper rail (*Rallus longirostris levipes*) has recently been documented breeding in the Brookhurst Marsh in the immediate vicinity of the HBEP site (Zembal and Hoffman 2012). It also breeds at the Santa Ana River Marsh at the southeastern end of the Huntington Beach Wetlands complex (CDFW 2013).The wetland complex provides foraging habitat for other endangered bird species including the western snowy plover (*Charadrius alexandrinus nivosus*) and the California least tern (*Sternula antillarum browni*) (Merkel & Associates 2004). Other special-status wildlife species observed utilizing the area include California brown pelicans (*Pelecanus occidentalis*) (foraging only) and the salt marsh skipper (*Panoquina errans*).

Talbert Nature Preserve

The Talbert Nature Preserve is in Costa Mesa along the east side of the Santa Ana River approximately 1.5 miles east of the HBEP site. Natural communities in this preserve include coastal strand (dunes), native grassland, woodlands, and riparian woodland/scrub. Special-status species known to occur in this area include southern tarplant (*Centromadia parryi ssp. australis*) and Davidson's salt scale (*Atriplex serenana var. davidsonii*).

U.S. Army Corps of Engineers Salt Marsh Restoration Project

The Los Angeles District of the USACE owns approximately 92 acres of salt marsh habitat just north of Highway 1 on the eastern side of the Santa Ana River 1.5 miles southeast of the HBEP site. The marsh is subject to muted tidal influence due to the elevation and operation of tidal gates. This wetland area supports a high diversity of bird species including western snowy plover and Belding's savannah sparrow.

Bolsa Chica Wetlands

The Bosla Chica wetlands are four miles to the northwest of the HBEP site. These wetlands encompass approximately 900 acres. Approximately 80 percent of the wetlands comprise a mixture of salt marsh and open mudflats with the remaining 20 percent consisting of open water with tidal flows controlled by flood gates. Many species of birds have been documented to occur at these wetlands including 32 special-status birds such as the California least tern, western snowy plover, Belding's savanna sparrow, and light-footed clapper rail. Several special-status plants, amphibians, reptiles, and mammals are also known to occur in this area including southern tarplant, Coulter's goldfields (*Lasthenia glabrata ssp. coulteri*), San Diego horned lizard (*Phrynosoma coronatum blainvillii*), western pond turtle (*Emys marmorata*), silvery legless lizard (*Anniella pulchra*) and the southern California salt marsh shrew (*Sorex ornatus salicornicus*).

Upper Newport Bay Ecological Reserve and Nature Preserve

Upper Newport Bay Ecological Reserve and Nature Preserve encompasses approximately 1,350 acres of wetland habitat including open water, mud flats, and coastal salt marsh. This wetland area is approximately five miles east of the proposed HBEP site. In 1975, the State of California purchased 752 acres of the wetlands and established the Upper Newport Bay Ecological Reserve, which is managed by CDFW. The ecological reserve is bordered on three sides by the Upper Newport Bay Regional Park and Nature Preserve, which is owned and managed by Orange County. Complete tidal flushing of the upper bay occurs every 3 to 4 days. This wetland provides habitat for a number of bird species including the light footed clapper rail, Belding's savanna sparrow, California least tern, and brown pelican. One endangered plant species, salt marsh bird's-beak (*Cordylanthus maritimus ssp. maritimus*), is also found in this area.

San Joaquin Freshwater Marsh Reserve

The 512-acre San Joaquin Freshwater Marsh Reserve is located at the head of Newport Bay approximately seven miles east of the proposed HBEP site. The University of California Natural Reserve Program owns 202 acres of the reserve which are managed through U.C. Irvine. Orange County owns the remaining 310 acres. The reserve encompasses a variety of habitats including seasonal ponds, tule marsh, riparian woodland/scrub, wet meadow, and uplands. Special-status bird species observed at the preserve include the light-footed clapper rail, California least tern, Swainson's hawk (*Buteo swainsoni*), white tailed kite (*Elanus leucurus*), and tricolored blackbird (*Agelaius tricolor*). Other special-status species observed in this area include the western pond turtle and chaparral ragwort (*Senecio aphanactis*).

Seal Beach National Wildlife Refuge

The Seal Beach National Wildlife refuge is located approximately eight miles northwest of the proposed HBEP site within the boundaries of the Seal Beach Naval Weapons Station. The refuge includes 911 acres of remnant saltwater marsh in the Anaheim Bay estuary. The refuge provides important habitat for a number of migratory birds as well as three endangered species including the light footed clapper rail, California least tern, and Belding's savanna sparrow.

Laguna Coast Wilderness Park

The 7,000-acre Laguna Coast wilderness park is located in the southwestern part of the San Joaquin Hills approximately eight miles east of the proposed HBEP site. Important natural communities associated with this area include coastal sage scrub, maritime chaparral, woodlands, and grasslands. Special-status species known to occur in this area include the California gnatcatcher (*Polioptila californica*) and the orange-throated whiptail (*Cnemidophorus hyperythrus*).

Boomer Canyon Open Space Preserve

The city of Irvine's Boomer Canyon Open Space Preserve encompasses approximately 37,000 acres and has been officially designated as a Natural Landmark by the State of California as well as the U.S. Department of the Interior. The preserve contains large contiguous patches of natural habitats including coastal sage scrub, chaparral, woodlands, grassland, and riparian areas. Several special-status species including the California gnatcatcher, cactus wren (*Campylorhynchus brunneicapillus*), peregrine falcon (*Falco peregrinus*), orange-throated whiptail, and the Pacific pocket mouse (*Perognathus longimembris pacificus*) are known to occur on the preserve. A portion of the Boomer Canyon Open Space preserve is located approximately 9.5 miles east of the proposed HBEP site.

Los Cerritos Wetlands

The Los Cerritos wetlands complex is an approximately 500-acre site that is adjacent to the Alamitos Generating Station site and approximately 1,245 feet west of the proposed offsite laydown area. Approximately two acres of these wetlands have been established as a California least tern nesting site (City of Long Beach 2006).

Jack Dunster Marine Biological Reserve

The Jack Dunster Marine Biological Reserve is a 2.7–acre site that contains 1.5 acres of land and 1.2 acres of shallow water that was been constructed on the northwestern side of the Los Cerritos Channel. Habitats in this small reserve include coastal sage scrub, coastal marsh, intertidal mudflats, and rocky intertidal zone (City of Long Beach

2012a). The reserve is located approximately one mile west of the proposed offsite laydown area and provides habitat for waterfowl and fish.

Golden Shore Marine Biological Reserve Park

In 1997, the city of Long Beach's Golden Shore Marine Biological Reserve Park was originally a launch ramp and parking lot that was converted into 6.4 acres of intertidal and sub tidal wetlands habitat as mitigation for the conversion of 20 acres of Shoreline Park into the Aquarium of the Pacific and the Rainbow Harbor commercial/recreation attraction (City of Long Beach 2012b). This park is located approximately 5.9 miles west of the HBEP offsite laydown area. This reserve park has salt marsh habitat that contains cordgrass, pickleweed, and saltgrass at slightly higher elevations, which provides habitat for waterfowl and fish.

Critical Habitat

Critical habitat is a formal designation under the Endangered Species Act. In accordance with section 3(5)(A)(i) of the Act and the regulations at Title 50, Code of Federal Regulations, section 424.12, in determining which areas occupied by the species at the time of listing to designate as critical habitat, factors considered are those physical and biological features essential to the conservation of the species that may require special management considerations or protection. Critical habitat for the following federally listed species occurs in the regional vicinity of the proposed HBEP.

Coastal California gnatcatcher

Critical habitat for the coastal California gnatcatcher is located approximately 1.5 miles east of the proposed HBEP site on the east side of the Talbert Channel, just north of Highway 1 within the southern California Natural Community Conservation Plan Subregion of Orange County (USFWS 2007a). There is no critical habitat for the coastal California gnatcatcher within 10 miles of the offsite laydown area.

San Diego Fairy shrimp

Critical habitat (Subunit 1C) for the San Diego fairy shrimp (*Branchinecta sandiegonensis)* is found approximately two miles to the east and 2.3 miles to the northeast of the proposed HBEP site. Subunit 1C consists of 15 acres of habitat occupied by the species at the time of listing and the species continues to occur within this subunit. This subunit contains all of the features essential to the conservation of the species. It is located south of the Santa Ana River, two miles inland from the coast on privately owned land. The vernal pool complex at subunit 1C is one of only five known vernal pool complexes containing the San Diego fairy shrimp in Orange County. This vernal pool complex and the vernal pool complex at Fairview Park (subunit 1B), which is excluded from critical habitat but part of the Fairview Park Master Plan, are the only remaining examples of coastal vernal pools in Orange County. Subunit 1C is closed to recreational use; however, this area has been degraded by past activities and may face future impacts from the development within this subunit or its watershed.

Western Snowy Plover

The final rule for USFWS-designated critical habitat for western snowy plover was published on June 19, 2012 (USFWS 2012a), and includes the Bolsa Chica State

Beach and Bolsa Chica Preserve, which are located approximately four miles to the northeast of the proposed HBEP site. The beach habitats for western snowy plover within the designated critical habitat are generally characterized by large, flat, and open spaces.

Wetlands and Wildlife Care Center

The Wetlands and Wildlife Care Center is a non-profit organization that was initially designed to care for birds in the event of an oil spill in Southern California, but has expanded to care for any injured birds and some mammals. The Center includes a hospital with surgery rooms, areas for bird intake, holding, washing, drying, and recovery, as well as a series of outdoor chain-link pens with pools for rehabilitation and recovery. These open air pens are approximately 25 feet southeast of the proposed HBEP site.

EXISTING VEGETATION AND WILDLIFE

The applicant conducted a reconnaissance-level survey of biological resources within the proposed project area in September 2011. Supplemental surveys were conducted in July 2012. The supplemental botanical survey was conducted within the project area and along the perimeter fence line. The supplemental wildlife survey encompassed the project area and a 500-foot buffer from the project boundary. In addition, four observation points were established along the southeast perimeter of the site to conduct 10-minute observations of avian activity in the adjacent marsh.

The following description of existing biological resources presents the results of biological surveys of the proposed project as well as observations from staff's site visits.

Vegetation

The proposed HBEP site and offsite laydown area are industrial. The majority of the project area is paved and any unpaved areas are subject to regular chemical weed control. Landscape trees and shrubs have been planted along the perimeter fencing, but no natural habitats or wetlands are present. Species observed on site are primarily nonnative and include bindweed (*Convolvulus arvensis*), cheeseweed (*Malva parviflors*), ice plant (*Carpobrotus* spp.), lollypop tree (*Myoporum laetum*) and tocolote (*Centaurea meletensis*). Sparse natives are occasionally present including alkali weed (*Cressa truxillensis*), Parish's pickleweed (*Salcornia subterminalis*), and saltgrass (*Distichlis spicata*).

Within one mile of the proposed HBEP site and offsite laydown area the following vegetation communities and land cover types are present.

- **Urban.** Urban development represents the largest land cover type in the survey area. It includes residential, commercial, light industrial, public schools, and other municipal facilities.
- **Industrial and landfill.** This land cover type includes the SCE 230-kV substation and former Plains All American Tank Farm on the east side of the proposed HBEP site. The ASCON landfill is present immediately northeast of the proposed HBEP site and the Orange County Sanitation District facilities are located southeast of the proposed HBEP site across the Santa Ana River.

- **Parks and open space.** Parks within one mile of the project area include Huntington Beach State Park, Edison Community Park, Gisler Park, and Eader Park. Open spaces include the green belt along the Santa Ana River and undeveloped landscaped areas along Magnolia Street.
- **Coastal Salt Marsh Wetland Preserves.** As described above (see "Regional Wetlands and Other Protected Areas"), the Huntington Beach Wetlands Conservancy's Coastal Marsh Restoration Complex is located adjacent to the proposed HBEP site.

In addition, the flowing significant natural communities as identified by the CDFW's California Natural Diversity Database (CNDDB) are present within 10 miles of the project area (excerpted from HBEP 2012a and verified by staff).

Southern Coastal Salt Marsh

Southern coastal salt marsh occurs in areas subject to regular tidal flooding by salt water such as sheltered inland bays, estuaries, and lagoons. The distribution of plant species within the salt marsh is often in distinct zones based on the frequency and duration of tidal flooding. Typically California cordgrass (*Spartina folosia*) occurs at the lowest elevations adjacent to open water that are subject to regular, prolonged tidal inundation. The mid-elevation areas of the marsh area typically characterized by pickleweed (*Salicornia virginica*) and are generally subject to cyclical inundation during high tides and drying during low tides. The upper marsh zone is generally subject to flooding for short durations and only during higher high tides. It supports a more diverse mixture of plant species including pickleweed, saltgrass (*Distichlis spicata*), alkali heath (*Frankenia salina*), alkali weed (*Cressa truxilensis*), California seablite (*Suaeda californica*), and marsh jaumea (*Jaumea carinosa*). In the immediate vicinity of the proposed HBEP site, the southern coastal salt marsh habitat is found in the Huntington Beach Wetlands Conservancy's Coastal Marsh Restoration Complex, at the USACE's Salt Marsh Restoration Project near the mouth of the Santa Ana River, at the Talbert Nature Preserve, at the Bolsa Chica Ecological Reserve, and at the Seal Beach National Wildlife Refuge. Southern coastal salt marsh habitat is also found to the east northeast of the offsite laydown area.

Southern Foredunes

Southern foredunes are similar to active sand dunes but are subject to less wind, have more stable sand, and greater availability of groundwater; therefore, the area supports the establishment of plant species that further stabilize the dunes. Native plant species commonly found in this habitat include beach morning glory (*Calystegia soldanella*), silver bur ragweed (*Ambrosia chamissonis*), and common eucrypta (*Eucrypta alba*). Southern foredune habitat is located southeast of the proposed HBEP site within Huntington Beach State Park and at Newport Beach located southeast of the offsite laydown area. A small area of southern foredune habitat is also found at the Bolsa Chica Ecological Reserve.

Southern Dune Scrub

Southern dune scrub is characterized as a dense coastal scrub community of scattered shrubs, subshrubs, and herbs that are typically less than one meter tall and often associated with a high percentage of cover. This habitat type is drier, warmer, and experiences less onshore wind when compared to central and northern dune scrub habitats. Native plants commonly found in this habitat include beach saltbush (*Atriplex leucophylla*), California croton (*Croton californicus*), California ephedra (*Ephedra californica*), mock heather (*Ericameria ericoides*), dune lupine (*Lupinus chamissonis*), desert thorn (*Lycium brevipes*), prickly pear, lemonade berry, and jojoba (*Simmondsia chinensis*). This sensitive habitat type occurs 0.6 mile to northwest of the proposed HBEP site and southeast of the offsite laydown area.

Southern Cottonwood Willow Riparian Forest

Southern cottonwood willow riparian forest is characterized by broadleaf winter-deciduous trees including cottonwoods (*Populus fremontii*; *P. trichocarpa*) and several types of willows including black willow (*Salix gooddingii*), sand bar willow (*Salix exigua*), Pacific willow (*Salix lasiandra*), and arroyo willow (*Salix lasiolepis*). Associated species include sycamore (*Platanus racemosa*), mugwort (*Artemisia douglasiana*), and coyotebrush (*Baccharis glutinosa*). Southern cottonwood willow riparian scrub has occurs along the Santa Ana River greenbelt approximately three miles to the east and northeast of the proposed HBEP site.

Southern Coast Live Oak Riparian Forest

Southern coast live oak riparian forest is characterized by locally dense evergreen woodlands dominated by coast live oak (*Quercus agrifolia*). Associated species may include bay laurel (*Umbellularia californica*), big leaf maple (*Acer macrophyluum*), mugwort, toyon (*Hertermeles arbutifolia*), wild rose (*Rosa californica*), and poison oak (*Toxicodendron diversilobum*). A small area of southern coast live oak woodland has been identified approximately nine miles southeast of the proposed HBEP site.

<u>Common Wildlife</u>

Due to the frequency and intensity of disturbance from operation of the existing Huntington Beach Generating Station, the proposed HBEP site does not provide habitat capable of supporting a diverse assemblage of wildlife. Species observed within the proposed project site include California ground squirrel (*Otospermophilus beecheyi),* house finch (*Carpodacus mexicanus*)*,* house sparrow (*Passer domesticus*), and Western fence lizard (*Sceloporus occidentalis*). Other birds protected under the Migratory Bird Treaty Act (MBTA) and CDFW codes, but without other special-status listing such as killdeer (*Charadrius vociferous*), pigeons (*Columba* sp.), doves (*Zenaida* sp.), house finches, and sparrows (*Passer* sp.) may nest in open areas and in unused structures on the HBEP site.

The adjacent marshes provide habitat for a greater diversity of common wildlife species. Species observed in this habitat include American crow (*Corvus brachyrhynchos),* barn swallow (*Hirundo rustica), c*ommon yellowthroat (*Geothlypis trichas*)*,* double-crested cormorant (*Phalacrocorax auritus*)*,* European starling (*Sturnus vulgaris*), great blue heron (*Ardea herodias*), great egret (*Ardea alba*)*,* gull (*Larus* sp.), killdeer (*Charadrius vociferous*)*,* mourning dove (*Zenaida macroura*)*,* rock pigeon (*Columba liviaII*)*, s*nowy egret (*Egretta thula*)*,* and turkey vulture (*Cathartes aura*).

SPECIAL-STATUS SPECIES

Special-status species are plant and wildlife species that have been afforded special recognition by federal, state, or local resource agencies or organizations. Listed and special-status species are of relatively limited distribution and typically require unique habitat conditions. Special-status species are defined as meeting one or more of the following criteria:

- Federally or state-listed, proposed, or candidate for listing, as rare, threatened or endangered under the Endangered Species Act or California Endangered Species Act;
- Protected under other state or federal regulations (e.g., Migratory Bird Treaty Act);
- Identified as a California Species of Special Concern by the CDFW;
- California Fully Protected Species;
- A plant species considered by the California Native Plant Society and CDFW to be “rare, threatened, or endangered in California” (California Rare Plant Rank [CRPR] 1A, 1B, and 2) as well as CRPR 3 and 4 species;
- A plant listed as rare under the California Native Plant Protection Act;
- Considered a locally significant species, that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region or is so designated in local or regional plans, policies, or ordinances; or
- Any other species receiving consideration during environmental review under the California Environmental Quality Act (CEQA).

The project site and offsite laydown area are industrial brownfield sites with operating power plants, and vegetation is limited to a few weedy species that occur in asphalt cracks and other areas, as well as landscaping. Rare plants and most special-status wildlife are not expected to occur onsite at either location; however, nearby marshes, parks, and other natural areas support special-status species that have the potential to be affected by construction and operation of the proposed project. **Biological Resources Table 2** identifies the nearest occurrences of special-status species reported in the California Natural Diversity Database (CDFW 2013) and California Native Plant Society’s (CNPS 2013) Inventory of Rare and Endangered Plants, but the majority of the species would not be likely to occur on site.

Biological Resources Table 2
Special-status Species Known to Occur or Potentially Occurring in the HBEP Area and the Regional Vicinity

Common Name (*Scientific Name*)	Status Fed/ State/CRPR/G-Rank/S-Rank	Potential for Occurrence in Project Impact Area
PLANTS		
Chaparral sand-verbena (*Abronia villosa var. aurita*)	__/__/1B.1/ G5T3T4/S2	**Not Likely to Occur.** No suitable habitat occurs within the proposed project site or offsite laydown area. Historic CNDDB occurrence in Santa Ana River bed, 1.5 to 2 miles from the ocean.
Aphanisma (*Aphanisma blitoides*)	__/__/1B.2/ G3G4/S3	**Not Likely to Occur**. No suitable habitat occurs within the proposed project site or offsite laydown area. Historic CNDDB occurrence in Newport Beach and Upper Newport Bay Regional Park.
Ventura Marsh milk-vetch (*Astragalus pycnostachyus var. lanosissimus*)	FE/SE/1B.1/ G2T1/S1	**Not Likely to Occur.** No suitable habitat occurs within the proposed project site or offsite laydown area. Nearest CNDDB occurrence is historic record from Bolsa Bay; possibly extirpated.
Coulter's saltbush (*Atriplex coulteri)*	__/__/ 1B.2/ G2/S2	**Not Likely to Occur.** No suitable habitat occurs within the proposed project site or offsite laydown area. Nearest CNDDB occurrence is historic record at the Newport Bay approximately 5.3 miles from proposed HBEP project site.
South coast saltscale (*Atriplex pacifica*)	__/__/1B.2/ G3G4/S2	**Not Likely to Occur.** No suitable habitat occurs within the proposed project site or offsite laydown area. Nearest records are from 1932 at the Newport Bay and 1998 at the Crystal Cove State Park, Pelican Point Coastal Terrace.
Parish's brittlescale (*Atriplex parishii*)	__/__/1B.1/ G1G2/S1	**Not Likely to Occur.** No suitable habitat occurs within the proposed project site or offsite laydown area. One record 9 miles northeast of the offsite laydown area; this occurrence is from 1881 and the area is now developed.
Davidson's saltscale (*Atriplex serenana var. davidsonii*)	__/__/1B.2/ G5T2?/ S2?	**Low.** No suitable habitat occurs within the proposed project site or offsite laydown area. CNDDB occurrence records are from Santa Ana River, Balboa, Newport Lagoon, San Joaquin Marsh Preserve, and UC National Preserve System. The nearest CNDDB record is 1.7 mile from the proposed HBEP site.

Common Name (*Scientific Name*)	Status Fed/ State/CRPR/G-Rank/S-Rank	Potential for Occurrence in Project Impact Area
Intermediate mariposa-lily (*Calochortus weedii var. intermedius*)	__/__/1B.2/ G3G4T2/S2.2	**Not Likely to Occur.** No suitable habitat occurs within the proposed project site or offsite laydown area. CNDDB record was reported as constituent of the rock outcrop habitat which has been searched for *Dudleya multicaulis* (not observed) in 1984 in San Joaquin Hills approximately 10 miles from the HBEP site.
Southern tarplant (*Centromadia parryi ssp. australis*)	__/__/1B.1/ G3T2/S2	**Low.** Though multiple records exist in the area, the HBEP site and offsite laydown area are unlikely to support this species given lack of native habitat and vegetation management practices at the sites. The nearest CNDDB records are at Loynes Drive and Studebaker Ave. (0.3 mile northwest of offsite laydown area), Bixby Ranch Oil Field (0.5 mile south of offsite laydown area),Talbert regional Park, Santa Ana River Marsh, Upper Newport Back Bay, Bolsa Chica, and Long Beach about 1 mile from the offsite laydown area.
Salt marsh bird's-beak (*Chloropyron maritimum ssp. maritimum*)	FE/SE/1B.2/ G4?T1/S1	**Not Likely to Occur.** No suitable habitat occurs within the proposed project site or offsite laydown area. Most of the nearest occurrences are historic records and are noted in CNDDB as possibly extirpated. Nearest presumed extant, recent record is in Upper Newport Bay Ecological Reserve 5 miles east of the HBEP site.
Many-stemmed dudleya (*Dudleya multicaulis*)	__/__/1B.2/ G2/S2	**Not Likely to Occur.** No suitable habitat occurs within the proposed project site or offsite laydown area. Regionally this species is documented from a 1932 collection from Newport Bay approximately 5 miles east of the HBEP site and a 1908 collection from Corona Del Mar over 7 miles southeast of the project site. These occurrences are believed to be extirpated.
Cliff spurge (*Euphorbia misera*)	__/__/2.2/ G5/S1	**Not Likely to Occur.** No suitable habitat occurs within the proposed project site or offsite laydown area. The closest record is 7 miles southeast of the HBEP site and this species has not been documented within 10 miles of the offsite laydown area.

Common Name (*Scientific Name*)	Status Fed/ State/CRPR/G-Rank/S-Rank	Potential for Occurrence in Project Impact Area
Los Angeles sunflower (*Helianthus nuttallii ssp. parishii*)	__/__/1A/ G5TH/SH	**Not Likely to Occur.** No suitable habitat occurs within the proposed project site or offsite laydown area. The CNDDB documents two historic occurrences; 5 miles north and 5 miles east of the HBEP site. This species is presumed extirpated in California.
Mesa horkelia (*Horkelia cuneata var. puberula*)	__/__/1B.1/ G4T2/S2.1	**Not Likely to Occur.** No suitable habitat occurs within the proposed project site or offsite laydown area. The closest record is about 5 miles northwest of the HBEP site at the Bolsa Chica Salt Marsh.
Southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*)	__/__/4.2/ G5T5/S3.2	**Low.** No suitable habitat occurs within the proposed project site or offsite laydown area, but occurs in the Huntington Beach Wetlands Conservancy's coastal salt marsh preserved immediately adjacent to the HBEP site.
Coulter's goldfields (*Lasthenia glabrata ssp. coulteri)*	__/__/1B.1/ G4T3/S2.1	**Not Likely to Occur.** No suitable habitat occurs within the proposed project site or offsite laydown area. Documented CNDDB occurrences within 5 miles of the HBEP site or laydown area are from Los Alamitos, Bryant Ranch, Seal Beach National Wildlife Refuge, Costa Mesa, and Bolsa Chica Salt Marsh. All are historic records, and most are listed by the CNDDB as possibly extirpated.
Robinson's pepper-grass (*Lepidium virginicum var. robinsonii*)	__/__/4.3/ G5T3/S3	**Not Likely to Occur.** No suitable habitat occurs within the proposed project site or offsite laydown area. There is one CNDDB record from the UC Irvine Open Space preserve about 7 miles from the HBEP site.
Mud nama *(Nama stenocarpum*)	__/__/2B.2/ G4G5/S1S2	**Not Likely to Occur.** No suitable habitat occurs within the proposed project site or offsite laydown area. Nearest occurrences are a historic record from the Seal Beach National Wildlife Refuge 2 miles from the offsite laydown area and a 1998 record from vernal pools in the Fairview Regional Park approximately 3 miles from the HBEP site.
Gambel's water cress (*Nasturtium gambelii*)	FE/ST/1B.1/ G1/S1	**Not Likely to Occur.** No suitable habitat occurs within the proposed project site or offsite laydown area. Nearest record is from 1908 collection at Huntington Beach approximately 1.5 miles from the HBEP site; this occurrence has likely been extirpated by development.

Common Name (*Scientific Name*)	Status Fed/ State/CRPR/G-Rank/S-Rank	Potential for Occurrence in Project Impact Area
Prostrate vernal pool navarretia (*Navarretia prostrata*)	__/__/1B.1/ G2/S2	**Low.** No suitable habitat occurs within the proposed project site or offsite laydown area. Known from vernal pools in the Fairview Regional Park approximately 2 miles from the HBEP site.
Coast woolly-heads (*Nemacaulis denudata var. denudata*)	__/__/1B.2/ G3G4T3?/ S2.2	**Low.** No suitable habitat occurs within the proposed project site or offsite laydown area. Nearby records are from 1951, 1955, 1986, 1993, 2003, 2004, and 2011 observations at Seal Beach, Newport Bay and Peninsula, Bolsa Chica, the Least Tern Preserve north of the mouth of the Santa Ana River, and the southern end of the Huntington State Beach. Closest CNDDB occurrences are about 1.7 miles from the HBEP site and about 1.25 miles from the offsite laydown area.
California Orcutt grass (*Orcuttia californica)*	FE/SE/1B.1/G1/ S1	**Not Likely to Occur.** No suitable habitat occurs within the proposed project site or offsite laydown area. Species was documented approximately 5 miles northwest of the offsite laydown area, but this occurrence is presumed extirpated.
Lyon's pentachaeta (*Pentachaeta lyonii*)	FE/SE/1B.1/G2/ S2	**Not Likely to Occur.** No suitable habitat occurs within the proposed project site or offsite laydown area. The nearest record is approximately 4.5 miles northeast of the project area and approximately 6 miles southeast of the offsite laydown area.
Nuttall's scrub oak (*Quercus dumosa*)	__/__/1B.1/ G2/S2	**Not Likely to Occur.** No suitable habitat occurs within the proposed project site or offsite laydown area, and this conspicuous plant was not observed during surveys of the project site. Nearest occurrence record is approximately 6 miles southeast of the HBEP and no records have been documented within 10 miles of the offsite laydown area.
Sanford's arrowhead (*Sagittaria sanfordii*)	__/__/1B.2/ G3/S3	**Not Likely to Occur.** No suitable habitat occurs within the proposed project site or offsite laydown area. This species has been documented about 5.7 miles northwest of the HBEP site. No occurrences records for this species exist within 10 miles of the offsite laydown areas.

Common Name (*Scientific Name*)	Status Fed/ State/CRPR/G-Rank/S-Rank	Potential for Occurrence in Project Impact Area
Chaparral ragwort (*Senecio aphanactis*)	__/__/2.B2/ G3?/S2	**Not Likely to Occur.** No suitable habitat occurs within the proposed project site or offsite laydown area. The nearest record is approximately 7 miles east northeast of the HBEP site.
Salt spring checkerbloom (*Sidalcea neomexicana*)	__/__/2B.2/ G4?/S2S3	**Not Likely to Occur.** No suitable habitat occurs within the proposed project site or offsite laydown area. This species has been recorded approximately one-half mile north of the offsite laydown area; however, this record is from 1936 and the area is now developed.
Estuary seablite (*Suaeda esteroa*)	__/__/1B.2/ G3/S2	**Not Likely to Occur.** No suitable habitat occurs within the proposed project site or offsite laydown area. Historic occurrences of the species have been reported at the Bolsa Chica Ecological Reserve, near the Seal Beach National Wildlife Refuge, and Newport Slough east of the Santa Ana River (approximately 5 miles from HBEP site).
San Bernardino aster (*Symphyotrichum defoliatum*)	__/__/1B.2/ G2/S2	**Not Likely to Occur.** No suitable habitat occurs within the proposed project site or offsite laydown area. Closest CNDDB occurrence record is near Newport Bay approximately 5.1 miles from the HBEP site.
WILDLIFE		
Invertebrates		
San Diego fairy shrimp (*Branchinecta sandiegonensis*)	FE/__/__/ G1/S1	**Low.** No suitable habitat occurs within the HBEP site or offsite laydown area. Recorded in Fairview Park, 2.3 miles from the HBEP site. Species occurs in vernal pools. There is designated critical habitat about 1.5 miles east and 2.3 miles northeast of the HBEP site.
Western tidal-flat tiger beetle (*Cicindela gabbii*)	__/SA/__/ G4/S1	**Not Likely to Occur.** No suitable habitat occurs within the HBEP site or offsite laydown area. Area occurrences are historic and most are considered extirpated. Species inhabits estuaries and mudflats along the Southern California coast.
Sandy beach tiger beetle (*Cicindela hirticollis gravida*)	__/SA/__/ G5T2/S1	**Not Likely to Occur.** No suitable habitat occurs within the HBEP site or offsite laydown area. Area occurrences are historic and are presumed extirpated by development. Species inhabits areas adjacent to non-brackish water along the California coast.

Common Name (*Scientific Name*)	Status Fed/ State/CRPR/G-Rank/S-Rank	Potential for Occurrence in Project Impact Area
Western beach tiger beetle (*Cicindela latesignata latesignata*)	__/SA/__/ G4T1T2/S1	**Not Likely to Occur.** No suitable habitat occurs within the HBEP site or offsite laydown area. Area occurrences are historic and are extirpated. Species inhabits mudflats and beaches in Southern California.
Senile tiger beetle (*Cicindela senilis frosti*)	__/SA/__/ G4T1/S1	**Not Likely to Occur.** No suitable habitat occurs within the HBEP site or offsite laydown area. One regional record; this occurrence is historic and is extirpated. Species inhabits marine shoreline, from central California coast south to salt marshes of San Diego. It is also found at Lake Elsinore.
Globose dune beetle (*Coelus globosus*)	__/SA/__/ G1/S1	**Low.** No suitable habitat occurs within the HBEP site or offsite laydown area. Recorded in 2008 at Huntington Beach less than one mile southeast of the HBEP site. Species inhabits coastal sand dunes.
Monarch butterfly (*Danaus plexippus*)	__/SA/__/ G5/S3	**Moderate.** Although not recorded on site, could roost in landscape trees throughout the HBEP. Records from the 1980s and 1990s Bolsa Chica Ecological Reserve, El Dorado Nature Center, Gum Grove Park, Huntington Beach Central Park, and Norma B. Gibbs Regional Park. Nearest record is one mile southeast of the offsite laydown area. Roosts in wind-protected tree groves along the California coast in winter.
Wandering (saltmarsh) skipper (*Panoquina errans*)	__/SA/__/ G4G5/S1	**Moderate.** No suitable habitat occurs within the HBEP site or offsite laydown area. Records from 1989 at the Bolsa Chica Ecological Reserve are about 5 miles southeast of the offsite laydown area. Recorded in 2004 at Newland Marsh less than one-half mile northwest of the HBEP site and in the Brookhurst Marsh less than one mile southeast of the HBEP site. Inhabits coastal salt marshes in Southern California; requires moist saltgrass for larval development.
Dorothy's El Segundo Dune weevil (*Trigonoscuta dorothea dorothea*)	__/SA/__/ G1T1/S1	**Not Likely to Occur.** No suitable habitat occurs within the HBEP site or offsite laydown area. Records from 1989 at the Bolsa Chica Ecological Reserve, about 5 miles southeast of the offsite laydown area. Inhabits coastal sand dunes in Los Angeles County.

Common Name (*Scientific Name*)	Status Fed/ State/CRPR/G-Rank/S-Rank	Potential for Occurrence in Project Impact Area
Mimic tryonia (=California brackishwater snail) (*Tryonia imitator*)	__/SA/__/ G2G3/S2S3	**Low.** No suitable habitat occurs within the HBEP site or offsite laydown area. Records from 1996 at Upper Newport Bay and 1968 at Bolsa Chica Ecological Reserve. Inhabits coastal lagoons, estuaries, and salt marshes along California coast.
Reptiles		
Orangethroat whiptail (*Aspidoscelis hyperythra*)	__/CSC/__/ G5/S2	**Low.** No suitable habitat occurs within the HBEP site or offsite laydown area. Nearest occurrence is historic record from Corona Del Mar, over 6 miles from the HBEP site, and is extirpated. Inhabits low elevation coastal scrub, chaparral, and valley-foothill hardwood habitats.
Green turtle (*Chelonia mydas*)	FT/__/__/ G3/S1	**Low.** No aquatic habitat occurs within the HBEP site or offsite laydown area. Nearest occurrence is in the San Gabriel River between East 2nd Street and Hwy 22 adjacent to power generating plant at offsite laydown area location.
Red-diamond rattlesnake (*Crotalus ruber*)	__/CSC/__/ G4/S2?	**Low.** No suitable habitat occurs within the HBEP site or offsite laydown area. This species has been recorded approximately 9 miles from the HBEP site. Suitable habitats include arid scrub, coastal chaparral, oak and pine woodlands, rocky grassland, and cultivated areas.
Western pond turtle (*Emys marmorata*)	__/CSC/__/ G3G4/S3	**Not Likely to Occur.** No aquatic habitat occurs at the HBEP site or offsite laydown area. All nearby records possibly extirpated.
Coast horned lizard (*Phrynosoma blainvillii*)	__/CSC/__/ G4G5/S3S4	**Low.** No suitable habitat occurs within the HBEP site or offsite laydown area. The species inhabits open areas of sandy soil and low vegetation in valleys, foothills and semiarid mountains from sea level to 8,000 ft. Nearest CNDDB occurrences are all extirpated by development.
Birds		
Tricolored blackbird (*Agelaius tricolor*)	BCC/CSC/__/ G5T2T4/S2S3	**Low.** No suitable habitat occurs within the HBEP site or offsite laydown area. Recorded approximately 0.5 mile from the offsite laydown area.

Common Name (*Scientific Name*)	Status Fed/ State/CRPR/G-Rank/S-Rank	Potential for Occurrence in Project Impact Area
Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens)*	__/WL/__/ G5T2T4/S2S3	**Low.** No suitable habitat occurs within the HBEP site or offsite laydown area. The only record within 10 miles of the project area was documented on the west slope of Muddy Canyon, approximately 1 mile south of Signal Peak, San Joaquin Hills (2.5 miles east of Newport Beach).
Grasshopper sparrow (*Ammodramus savannarum*)	__/CSC/__/ G5/S2	**Low.** No suitable habitat occurs within the HBEP site or offsite laydown area. Closest occurrence is approximately 7 miles from the proposed HBEP site. Inhabits coastal sage scrub.
Burrowing owl (*Athene cunicularia*)	BCC/CSC/__/ G4/S2	**Low.** No suitable habitat occurs within the HBEP site or offsite laydown area. Closest record is about 2.6 miles from the proposed project at Fairview Park in Costa Mesa; also recorded at Bolsa Chica Ecological Reserve.
Ferruginous hawk (*Buteo regalis*)	BCC/WL/__/ G4/S3S4	**Low.** No suitable habitat occurs within the HBEP site or offsite laydown area. Nearest CNDDB record is approximately 11 miles from the proposed project site and 2.5 miles from the offsite laydown area in Los Alamitos.
Coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*)	BCC/CSC/__/ G5T3Q /S3	**Low.** No suitable habitat occurs within the HBEP site or offsite laydown area. Nearest occurrences for this species have been recorded approximately 8-10 miles of the proposed HBEP site.
Western snowy plover (*Charadrius alexandrinus nivosus*)	FT/CSC/__/ G4T3/S2	**High.** The species has been reported less than one mile from the proposed HBEP site utilizing the coastal salt marshes in the vicinity of the site for foraging and loafing, including the Talbert Marsh. Nests at Huntington State Beach, approximately 1.3 miles from the HBEP site. Requires sandy, gravelly, or friable soils for nesting. There is designated critical habitat about 1.5 miles southeast of the HBEP site at the mouth of the Santa Ana River and about 5 miles northwest of the HBEP site at the Bolsa Chica Ecological Reserve and State Beach.

Common Name (*Scientific Name*)	Status Fed/ State/CRPR/G-Rank/S-Rank	Potential for Occurrence in Project Impact Area
Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	FC/SE/__/ G5T3Q/S3	**Not Likely to Occur.** No suitable habitat occurs within the HBEP site or offsite laydown area. Only record from the area, at San Gabriel River near Artesia, is from 1912 and this occurrence has been extirpated.
White-tailed kite (*Elanus leucurus*)	__/FP/__/ G5/S3	**Low.** No suitable habitat occurs within the HBEP site or offsite laydown area, but it could forage in adjacent marshes. This species has been documented in multiple locations east to northeast of the project area. The closest occurrence is in Upper Newport Bay approximately 6.5 miles from the project area.
California horned lark (*Eremophila alpestris actia*)	__/WL/__/ G5T3Q/S3	**Low.** No suitable habitat occurs within the HBEP site or offsite laydown area. This species has been documented approximately 7 miles southeast of the HBEP site.
Yellow-breasted chat (*Icteria virens*)	__/CSC/__/ G5/S3	**Not Likely to Occur.** No suitable habitat occurs within the HBEP site or offsite laydown area. This species has been documented in multiple locations approximately 8 miles northeast to southeast of the HBEP site.
California black rail (*Laterallus jamaicensis coturniculus*)	BCC/ST,FP/__/ G4T1/S1	**Low.** No suitable habitat occurs within the HBEP site or offsite laydown area. Historic CNDDB occurrence records are from 1970 and 1971 in the Upper Newport Bay approximately 5 miles from the proposed project site.
Osprey (*Pandion haliaetus*)	__/WL/__/ G5/S3	**Low.** No suitable habitat occurs within the HBEP site or offsite laydown area, but could forage in open waters near the project. The nearest CNDDB nesting occurrence is approximately 5.2 miles from the proposed HBEP site at the upper Newport Bay Ecological Reserve.
Belding's savannah sparrow (*Passerculus sandwichensis beldingi*)	__/SE/__/ G5T3/S3	**High.** No suitable habitat occurs within the HBEP site or offsite laydown area, but occurs in adjacent marshes. The species is known in several of the wetland preserves in the regional vicinity of the proposed project site, including the adjacent Magnolia and Upper Magnolia marshes. The nearest CNDDB occurrence is at the Newland Marsh approximately 0.5 mile from the proposed HBEP site.

Common Name (*Scientific Name*)	Status Fed/ State/CRPR/G-Rank/S-Rank	Potential for Occurrence in Project Impact Area
California brown pelican (*Pelecanus occidentalis Californicus*)	FD/SD, FP/__/ G4T3/S1S2	**High.** No suitable habitat occurs within the HBEP site or offsite laydown area. Has been recorded at the Santa Ana River Marsh and offshore approximately 6 miles southwest of the offsite laydown area.
Coastal California gnatcatcher (*Polioptila californica californica*)	FT/CSC/__/ G3T2/S2	**Low.** No suitable habitat occurs within the HBEP site or offsite laydown area. The nearest CNDDB occurrence records range from approximately 4 to 10 miles from the HBEP site, including several from around Upper Newport Bay. There is designated critical habitat about 1.5 mile east of the HBEP site on the east side of Talbert Channel.
Light-footed clapper rail (*Rallus longirostris levipes*)	FE/SE, FP/__/ G5T1T2/S1	**High.** Not likely to occur at the HBEP site or offsite laydown area, but could occur in adjacent marshes. This species has recently been discovered nesting at the nearby Brookhurst and Santa Ana River Marshes and possibly the Talbert Marsh, the closest of which is less than one mile from the HBEP site. It is expected to forage within Magnolia Marsh (Zembal 2013). As part of the Huntington Beach Restoration Plan, Magnolia Marsh site was restored in 2010. When completely established, which is anticipated during the construction and demolition period, Magnolia Marsh will provide suitable breeding habitat for the species.
Bank swallow (*Riparia riparia*)	__/ST/__/ G5/S2S3	**Not Likely to Occur.** No suitable habitat occurs within the HBEP site or offsite laydown area. The last CNDDB occurrence record was from 1937 in Huntington Beach approximately 1.6 miles from the proposed HBEP site. Nesting populations are considered to have been extirpated in southern California.
Black skimmer (*Rynchops niger*)	BCC/CSC/__/ G5/S1S3	**Low.** No suitable habitat occurs within the HBEP site or offsite laydown area; possible foraging habitat in open water habitats in the immediate vicinity of HBEP. The nearest nesting record is from 1990 at the Bolsa Chica Ecological Reserve.

Common Name (*Scientific Name*)	Status Fed/ State/CRPR/G-Rank/S-Rank	Potential for Occurrence in Project Impact Area
California least tern (*Sternula antillarum browni*)	FE/SE, FP/ G4T2T3Q/S2S3	**Moderate.** No suitable habitat occurs within the HBEP site or offsite laydown area. This species nests at Huntington State Beach, approximately 1.3 miles from the HBEP site, and at the Bolsa Chica Ecological Reserve approximately 4.75 miles from the HBEP site. It forages at the Talbert Marsh as well as along the lower portions of the Talbert and Huntington Channel.
Least Bell's vireo (*Vireo bellii pusillus*)	FE/SE/__/ G5T2/S2	**Not Likely to Occur.** No suitable habitat occurs within the HBEP site or offsite laydown area. The nearest record is from Talbert Nature Preserve, approximately 1.75 miles from the project site. Habitat consists of southern willow riparian scrub with mulefat scrub understory.
Mammals		
Western mastiff bat (*Eumops perotis californicus*)	__/CSC/__/ G5T4/S3?	**Moderate.** No suitable habitat occurs within the HBEP site or offsite laydown area, but may forage over the open water and wetlands and around the HBEP site. CNDBB records include Huntington Beach Central Park, 4 miles from the HBEP site (date of record not provided by CNDDB), and a record from Buena Park in 1990, approximately 9 miles from the offsite laydown area.

Common Name (*Scientific Name*)	Status Fed/ State/CRPR/G-Rank/S-Rank	Potential for Occurrence in Project Impact Area
Silver-haired bat (*Lasionycteris noctivagans*)	__/SA/__/ G5/S3S4	**Low.** No suitable habitat occurs within the HBEP site or offsite laydown area. There is one historic record from Bellflower in 1978, approximately 6.6 miles north of the offsite laydown area. This species forages over streams, ponds, and open brushy areas and roosts primarily in trees.
Hoary bat (*Lasiurus cinereus*)	__/SA/__/ G5/S4?	**Moderate.** No suitable habitat occurs within the HBEP site or offsite laydown area, but may forage in wetland areas adjacent to and near the project. There is one historic record from Newport Beach in 1990, approximately 4 miles southeast of the HBEP site. This species utilizes open habitats or habitat mosaics, and feeds near habitat edges. Requires trees for roosting and water.
Western yellow bat (*Lasiurus xanthinus*)	__/CSC/__/ G5/S3	**Low.** No suitable habitat occurs within the HBEP site or offsite laydown area. A CNDBB record from 1990 in Garden Grove is approximately 4.6 miles northeast of the offsite laydown area. The species is found in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. Roosts in trees and forages over water.
South coast marsh vole (*Microtus californicus stephensi*)	__/CSC/__/ G5T1T2/S1S2	**Low.** No suitable habitat occurs within the HBEP site or offsite laydown area. The CNDDB records occurrences at Sunset Beach (1916) and the Seal Beach Wildlife Refuge (1988) approximately 7 and 9 miles, respectively, from the HBEP site. It occurs in tidal marshes in Los Angeles, Orange, and Southern Ventura counties.
Big free-tailed bat (*Nyctinomops macrotis*)	__/CSC/__/ G5/S2	**Not Likely to Occur.** No suitable habitat occurs within the HBEP site or offsite laydown area. Nearest record is from Corona Del Mar (1988), approximately 7 miles southeast of the HBEP site. This species inhabits low-lying arid areas in Southern California and requires high cliffs or rocky outcrops for roosting.
Pacific pocket mouse (*Perognathus longimembris pacificus*)	FE/CSC/__/ G5T1/S1	**Not Likely to Occur.** No suitable habitat occurs within the HBEP site or offsite laydown area. Presumed extinct in the area. Suitable habitats for the contains fine-grain sandy substrates on the coastal strand, coastal dunes, river alluvium and coastal sage scrub.

Common Name (*Scientific Name*)	Status Fed/ State/CRPR/G-Rank/S-Rank	Potential for Occurrence in Project Impact Area
Southern California saltmarsh shrew (*Sorex ornatus salicornicus*)	__/CSC/__/ G5T1? /S1	**Low.** No suitable habitat occurs within the HBEP site or offsite laydown area. Historic CNDDB records are from 1933 in the Newport Lagoon, approximately 5 miles east-southeast of HBEP and 1968 in the general vicinity of Seal Beach, approximately 2 miles southwest of the offsite laydown area. Occurs in coastal marshes and requires dense vegetation and woody debris for cover.
American badger (*Taxidea taxus*)	__/CSC/__/ G5/S4	**Low.** No suitable habitat occurs within the HBEP site or offsite laydown area. One local CNDDB record from 1998 in the Newport Beach, approximately 3 miles southeast of the HBEP site, was of a badger killed on Superior Avenue. Inhabits most shrub, forest, and herbaceous habitats, primarily in drier open areas. Requires friable soil for burrow construction.

Sources: CDFW 2013a; CNPS 2013

Biological Resources Table 2 – Notes

STATUS CODES:

State
CSC: California Species of Special Concern. Species of concern to CDFW because of declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction.
SE: State listed as endangered
SR: State listed as rare
ST: State listed as threatened
SFP: Fully protected
WL: Watch List: includes species formerly on California Species of Special Concern List (Remsen 1978) but which did not meet the criteria for the current list of special concern bird species (Shuford and Gardali 2008).
SA: Special Animal. Species is tracked in the CNDDB (due to rarity, limited distribution in California, declining throughout the range, etc.) but holds no other special status at the state or federal level.

Federal
FE: Federally listed endangered: species in danger of extinction throughout a significant portion of its range
FT: Federally listed, threatened: species likely to become endangered within the foreseeable future
BCC: Fish and Wildlife Service: Birds of Conservation Concern: Identifies migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that represent highest conservation priorities
http://www.fws.gov/migratorybirds/NewReportsPublications/SpecialTopics/BCC2008/BCC2008.pdf
D: Delisted taxon that is considered recovered

California Native Plant Society (CNPS)
List 1B: Rare, threatened, or endangered in California and elsewhere
List 2: Rare, threatened, or endangered in California but more common elsewhere
List 3 = Plants which need more information
List 4 = Limited distribution – a watch list
0.1: Seriously threatened in California (high degree/immediacy of threat)
0.2: Fairly threatened in California (moderate degree/immediacy of threat)
0.3: Not very threatened in California (low degree/immediacy of threats or no current threats known)
Global Rank/State Rank
Global rank (G-rank) is a reflection of the overall condition of an element throughout its global range. Subspecies are denoted by a T-Rank; multiple rankings indicate a range of values
G1 = Less than 6 viable element occurrences (EOs) OR less than 1,000 individuals
G2 = 6-20 EOs OR 1,000-3,000 individuals
G3 = 21-100 EOs OR 3,000-10,000 individuals
G4 = Apparently secure; this rank is clearly lower than G3 but factors exist to cause some concern; i.e., there is some threat, or somewhat narrow habitat.
G5 = Population or stand demonstrably secure to ineradicable due to being commonly found in the world.
State rank (S-rank) is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank. An H-rank indicates that all sites are historical
S1 = Less than 6 element occurrences (EOs) OR less than 1,000 individuals
S1.1 = very threatened
S1.2 = threatened
S1.3 = no current threats known
S2 = 6-20 EOs OR 1,000-3,000 individuals
S3 = 21-100 EOs or 3,000-10,000 individuals
S4 = Apparently secure in California; this rank is clearly lower than S3 but factors exist to cause some concern, i.e., there is some threat or somewhat narrow habitat. No threat rank.
S5 = Demonstrably secure or ineradicable in California. No threat rank.
SH = All California occurrences historical (i.e., no records in > 20 years).
Potential Occurrence:

High – Suitable habitat is present within or near the proposed site: occurrence records exist for species in proximity to the site; species expected to occur on or near site

Moderate – Low quality habitat is present within or near the proposed site; species was not identified during reconnaissance surveys of the site; species may occur on or near site

Low – Marginal habitat is present on or adjacent to site; no recent records within 10 miles of the site

Not Likely to Occur – No recent records within 10 miles, no suitable habitat occurs on or near site

<u>Special-Status Plant Species</u>

The HBEP site and offsite laydown areas are entirely developed with no natural habitats present. The vegetation observed during the September 2011 and July 2012 reconnaissance surveys and staff site visits was limited to landscaping trees and shrubs and a few scattered weedy plants. As the potential for special-status plants to occur at the HBEP site and offsite laydown area is low, rare plant surveys were not conducted. However, several special-status plant species have been documented in the regional vicinity of the proposed project, including at the adjacent marshes. It is unlikely that special-status plants would colonize the project site or the offsite laydown area, but even in the event that would occur on unpaved or landscaped areas, vegetation and weed management practices at both sites would preclude persistence.

<u>Special-Status Wildlife</u>

The applicant conducted general reconnaissance surveys of the project site in September 2011 and 2012. No protocol or focused surveys were performed as the potential for special-status wildlife species to occur within the proposed project site and offsite laydown and parking areas is low. The following accounts focus on species with a moderate or high potential to occur on or near the site, and that could be affected by project construction and operation. Additional accounts for species with a low potential to occur on site are included in Section 5.2.2.8, *Special-Status Wildlife Species*, of the AFC (HBEP 2012a).

Birds

The project region supports a wide range of both resident and migratory bird species. The area is located within the Pacific Flyway, a very broad corridor stretching along the Pacific Coast from Mexico north to Alaska and into Siberia, Russia. Birds utilizing the area surrounding the project site and the regional vicinity include resident breeding birds, migratory birds that breed in the region but winter elsewhere, birds that forage and rest in the area during migration between breeding and wintering grounds, and species that winter in the project region. Nesting habitat on site is limited to landscaped areas including trees, and birds that nest on the ground on gravely substrates such as killdeer could also nest on site. Small mammals and reptiles as well as landscape plants provide foraging opportunities for birds on site. Native birds, regardless of any additional conservation status at the local, state, or federal level, are afforded protection by the federal Migratory Bird Treaty Act (MBTA) and California Fish and Game Code.

Belding's Savannah Sparrow

The Belding's savannah sparrow (*Passerculus sandwichensis beldingi*) is a state-listed endangered species. This subspecies is distinguished from the more common northern subspecies by a longer and thicker bill, darker and thicker streaks on the underside, darker and coarser streaks on the upper side, and darker marks on the face. The Belding's savannah sparrow is one of few species of birds that reside year-round in the coastal salt marshes of southern California, where it is endemic. This subspecies ranged historically from Goleta in Santa Barbara County in California south to El Rosario, Baja California, Mexico.

Belding's savannah sparrow is ecologically associated with both tidal and non-tidal, coastally located pickleweed (*Salicornia virginica*) marshes. Breeding territories can be very small and they nest semi-colonially or locally concentrated within a larger block of habitat, all of which may appear generally suitable. The species forages on the ground for insects, snails and other invertebrates, and seeds. Breeding appears to begin in early March. Within wetlands, the distribution of the species generally follows that of the pickleweed where the vegetation is subjected to extreme salinities or long periods of inundation. The Belding's savannah sparrow occupies the Huntington Beach Wetland marsh complexes and is known to breed in the coastal salt marsh wetlands in the immediate vicinity of the HBEP site (Merkel & Associates 2004; CDFW 2013a). This species is also found in the Bolsa Chica wetlands, at the Seal Beach National Wildlife Refuge, the Upper Newport Bay Ecological Reserve, and the USACE salt marsh restoration site on the east side of the Santa Ana River. Recent surveys in the Huntington Beach Wetlands documented 26 Belding's savannah sparrow territories in Magnolia Marsh, 37 territories in Brookhurst Marsh, and 4 territories in the Talbert Marsh (Zembal and Hoffman 2010).

No suitable habitat for the species occurs within the proposed HBEP, and no Belding's savannah sparrows were observed during the 2011 and 2012 surveys of the project site.

California Brown Pelican

The California brown pelican (*Pelecanus occidentalis*) is a California state "fully protected species" pursuant to Fish and Game Code section 3511(b)(2). It is a large water bird with a dark brownish body, a long pouched bill, and long broad wings. This species was formerly state and federally listed as endangered, but was de-listed in 2007 due to recovery of the population (Burkett et al. 2007). Brown pelicans feed on a variety of fish species which they catch by diving from the air into the water. This species nests in colonies usually on offshore islands.

California brown pelicans have been observed foraging within the tidal channels in the vicinity of the HBEP site and utilize the adjacent coastal salt marsh habitat for resting and loafing (Merkel & Associates 2004). It has also been documented offshore approximately 6 miles southwest of the offsite laydown area (CDFW 2013).

The open space and wetland habitats surrounding the site provide resting and loafing habitat for the species in the immediate vicinity of the site; however, there is no natural habitat on the HBEP site and the potential for occurrence on site is low. Additionally, it is not expected to breed in adjacent marshes due to lack of typical breeding habitat.

California Least Tern

The California least tern (*Sternula antillarum browni*) is federally and state-listed as endangered. The California least tern nests along the west coast of North America, from Baja California, Mexico, north to the San Francisco Bay area (USFWS 1980). This subspecies was listed as endangered by federal and state agencies due to a population decline resulting from loss of habitat (Cogswell 1977). It has long narrow wings and a broad forked tail. The body is white with pale gray and black-tipped wings. The head is black capped with a white streak across the forehead and the bill is yellow with a black tip. This subspecies forages for fish in open water habitats including near shore ocean waters, tidal channels, and estuaries. It breeds in open sandy areas, dirt, and dry mud near suitable foraging habitat. The species establishes nesting colonies on sandy soils with little vegetation along the ocean, lagoons, and bays. Their nests are shallow depressions lined with shells or other debris (Massey 1974). Least terns are generally present at nesting areas between mid-April and late September (Massey 1974; Cogswell 1977; Patton 2002), often with two waves of nesting during this time period (Massey and Atwood 1981).

In the project region, California least terns nest at Huntington State Beach, the Bolsa Chica wetlands, Seal Beach National Wildlife Refuge, and the Upper Newport Bay Ecological Reserve (CDFW 2013). It forages at the Talbert Marsh as well as along the lower portions of the Talbert and Huntington Channel. According to the Long Beach City Plan, Los Cerritos wetlands near the offsite laydown area have been preserved and an additional 2 acres have been established as a California least tern nesting site. Recent California least tern breeding surveys detected breeding pairs at the Huntington State Beach, Seal Beach and the Bolsa Chica Ecological Reserve (Marschalek 2008, 2009, and 2010).

There is no suitable nesting habitat for the California least tern at the HBEP site and it has very limited potential to occur on the site. However, the species would likely use the neighboring wetlands for foraging and loafing.

Light-footed Clapper Rail

The light-footed clapper rail (*Rallus longirostris levipes*) is federally and state-listed as endangered. It occupies coastal salt marshes from Santa Barbara County, California, to San Quintin Bay, Baja California, Mexico. Within its historical range the amount of suitable habitat has been severely reduced by conversion of marshes for other uses. This subspecies is one of three clapper rail subspecies in California formally recognized as endangered by the federal government and endangered or rare by the State of California.

The light-footed clapper rail has a tawny breast, gray-brown back, and vertical dusky and white bars on flanks with a white patch under its short upcocked tail. The light-footed clapper rail forages for mollusks and crustaceans in coastal salt marshes, mudflats, and along tidal channels. Studies of Upper Newport Bay and Anaheim Bay, (USFWS 1985) documented that the rail foraged throughout the salt marsh community and occasionally in surrounding habitats. Considerable foraging was observed in vegetation of the higher marsh in which *Salicornia virginica*, *Limonium californicum,* and arrow-grass (*Triglochin maritima)* were prevalent. Foraging birds were also observed along vegetation-mud flat interfaces, along mud banks of tidal creeks, in freshwater vegetation and ditched/ponded water, and to a lesser extent on open mudflats and upland hillsides. Nest sites are usually in areas of dense marsh vegetation including pickleweed and cord grass (*Schoenoplectus* spp.). It breeds from early March through August.

The light-footed clapper rail has recently been documented breeding in the Brookhurst Marsh in the immediate vicinity of the HBEP site (Zembal and Hoffman 2012). It also breeds at the Santa Ana River Marsh at the southeastern end of the Huntington Beach Wetlands complex (CDFW 2013). It may breed at Talbert Marsh, just northwest of the HBEP site. It also breeds in other wetland habitats in the regional vicinity including the Bolsa Chica wetlands, Seal Beach National wildlife refuge, the upper Newport Bay Ecological Reserve, the San Joaquin Freshwater Marsh Reserve, and Huntington Beach Wetlands Complex (Zembal et al. 2010; Zembal and Hoffman 2012).

The coastal wetland habitat in Magnolia Marsh, immediately adjacent to the proposed project site, was recently restored in 2010 as part of the Huntington Beach Wetlands Complex restoration plan. The light-footed clapper rail is expected to forage there, and the restored marsh will gradually develop more suitable breeding habitat as dense cordgrass and shallow water and mudflat foraging habitat are established within the marsh (Zembal 2013). Although it is not likely to occur on the HBEP site, the local breeding population is likely to expand into the adjacent Magnolia Marsh over the next several years as the habitat continues to establish.

Western Snowy Plover

The western snowy plover (*Charadrius alexandrinus nivosus*) is a federally listed threatened species and a California Species of Concern. This small shorebird is about 6 inches long, it has a thin dark bill and is pale brown to gray above with a white or buff colored underside with darker patches on its shoulders and head. It typically forages for small invertebrates in wet or dry beach sand, in salt marshes, and within low foredune vegetation. The Pacific coast breeding population of the western snowy plover currently extends along coastal beaches from the southern portion of Washington State to southern Baja California, Mexico. This population breeds primarily above the high-tide line on coastal beaches, sand spits, dune-backed beaches, sparsely vegetated dunes, beaches at creek and river mouths, and salt pans at lagoons and estuaries. Less common nesting habitats include bluff-backed beaches, dredged material disposal sites, salt pond levees, dry salt ponds, and river bars. The snowy plover winters mainly in coastal areas from southern Washington to Central America. In winter, snowy plovers are found on many of the beaches used for nesting as well as on beaches where they do not nest, in man-made salt ponds, and on estuarine sand and mud flats. The breeding season for the western snowy plover normally extends from March 1 through September 15, however the first nest at Bolsa Chica in 2009 occurred on February 23 and courting behavior has been observed as early as late January (Knapp and Peterson 2009).

Poor reproductive success resulting from human disturbance, predation, and inclement weather, combined with permanent or long-term loss of nesting habitat to urban development has led to the decline in active nesting colonies as well as an overall decline in the breeding and wintering population of the western snowy plover along the Pacific coast of the United States. In southern California, extensive recreational beach use by humans has precluded the western snowy plover from breeding in several historically used beach strand areas (USFWS 2007b).

The final rule for USFWS revised designated critical habitat for western snowy plover was published on June 19, 2012 (USFWS 2012), and includes the Bolsa Chica State Beach (subunit CA 46A) and Bolsa Chica Preserve (subunits CA 46B-F), and the Santa

Ana River Mouth (Subunit CA 47A). The subunit CA 46A at Bolsa Chica State Beach was occupied at the time of listing, is currently occupied, and supported an average wintering flock of 27 western snowy plover from 2003 through 2010 (USFWS 2012). The subunit annually supports a significant wintering flock of western snowy plover in a location with high-quality breeding habitat. This location contains the physical or biological features essential to the conservation of the species, including a wide sandy beach with occasional surfcast wrack supporting small invertebrates.

The Bolsa Chica Reserve subunits (subunits CA 46B–F) are located east of the Highway 1 in Orange County. They consist of 475 acres, all of which are owned by the State of California. Bolsa Chica Reserve contains significant nesting areas, and this location supported 47 breeding adult western snowy plover in 2009 (Knapp and Peterson, 2009). These subunits were occupied at the time of listing, are currently occupied, and annually support one of the largest breeding populations of western snowy plover in the region. The Recovery Plan for the western snowy plover states that this location contributes to the conservation goal for the region by providing a management potential of 70 breeding birds (USFWS 2007b). This location supported an average wintering flock of 14 western snowy plover from 2003 through 2010 (USFWS 2012). This reserve is an active oil field that underwent significant reconstruction and restoration between 2004 and 2006, including the addition of three new nest sites and a new ocean inlet that allows the water level to rise and fall resembling the irregular semi-diurnal tidal range of southern California's ocean waters (Knapp and Peterson 2009). This location contains the physical or biological features essential to the conservation of the species, including tidally influenced estuarine mud flats supporting small invertebrates, and seasonally dry ponds that provide nesting and foraging habitat for western snowy plover.

Unit CA 47 at the Santa Ana River Mouth is the closest critical habitat unit to the HBEP site (1.5 miles away). This unit consists of 19 acres and was not occupied at the time of listing. However, the USFWS considers this unit essential for the conservation of the species based on the fluctuating use of areas by the species as a response to habitat and resource availability. The unit is located adjacent to currently occupied areas and provides dispersal habitat between units. It provides habitat to support breeding plovers and will facilitate interchange between otherwise widely separated units (USFWS 2007b). This location has a wide sandy beach with surf-cast wrack supporting small invertebrates, and tidally influenced estuarine mud flats that provide nesting and foraging habitat for western snowy plover.

The western snowy plover is reported to regularly utilize coastal salt marsh habitats in the vicinity of the HBEP site for foraging and loafing (Merkel & Associates 2004). Historically, the western snowy plover bred along the beach from Upper Newport Bay to Anaheim Bay. The species has been reported approximately 0.6 mile from the proposed HBEP site utilizing the coastal salt marshes in the vicinity of the site for foraging and loafing (CDFW 2013).

Invertebrates

Wandering Skipper

The wandering skipper (*Panoquina errans*) is California Species Concern. It is a small butterfly measuring approximately 0.5 inch, which is associated with moist salt grass vegetation along the upper margins of coastal salt marshes. It is identifiable by its rich dark brown color and cream-colored spots on the dorsal forewing. The wandering skipper is found only along the coast in southern California, Baja California and northwestern mainland Mexico. Populations have been recorded from Huntington Beach, Upper Newport Bay, and Capistrano Beach. This species has been observed in the coastal salt marshes in the immediate vicinity of the HBEP site (Merkel & Associates 2004).

Mammals

Western Mastiff Bat

The western mastiff bat (*Eumops perotis californicus*) is a California Species of Concern that roosts in high buildings, forages in a variety of habitats. Historic CNDDB records were reported from 1949 in Santa Ana, approximately 9 miles from proposed HBEP site. The species has a potential to forage over the open water and wetlands and around the site and has been observed Huntington Beach Central Park.

Hoary Bat

The hoary bat (*Lasiurus cinereus*) does not have a specific conservation status at the federal, state, or local level, but it is tracked in the CDFW's CNDDB. It occurs throughout California, wintering along the coast and in southern California and breeding inland and north of the winter range. The hoary bat primarily feeds on moths, and it forages in a variety of habitats. It roosts in dense foliage of medium to large trees. The hoary bat migrates over long distances, and the sexes migrate separately. During migration, males are found in foothills, deserts, and mountains, and females are in lowlands and coastal valleys (CDFG 2005). The hoary bat may forage over wetlands in the project region, and there is one historic record of this species from Newport Beach in the CNDDB.

JURISDICTIONAL WETLANDS AND WATERS

The project area is actively maintained to facilitate operation of existing power generation and therefore does not support wetlands of other waters potentially under the jurisdiction of USACE, CDFW, and/or the California Coastal Commission (CCC). The fuel oil containment basin associated with Unit 5 of the existing Huntington Beach Generating Station is identified by the National Wetland Inventory (NWI) as PUBFx, a palustrine system with an unconsolidated bottom, which is semi-permanently flooded and has been excavated (USFWS 2013). The applicant delineated the potential wetland within the containment basin and found that it did not meet any of the three parameters for classification as a wetland (i.e., presence of hydrophytic vegetation, substrate is predominately undrained hydric soil, and substrate saturated with water or covered by shallow water at some time during the growing season of each year) (HBEP 2013a). Staff confirmed this condition during its site visit.

IMPACT ASSESSMENT

METHOD AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

A significant impact is defined under CEQA as “a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project” (Cal Code Regs. tit. 14, [hereinafter CEQA Guidelines] section 15382). In this analysis, the following impacts to biological resources are considered significant if the project would result in:

- a substantial adverse effect to wildlife species that are federally-listed or state-listed or proposed to be listed; a substantial adverse effect to wildlife species of special concern to CDFW, candidates for state listing, or animals fully protected in California;
- a substantial adverse effect to plant species considered by CDFW, USFWS, or CNPS to be rare, threatened, or endangered in California or with strict habitat requirements and narrow distributions; a substantial impact to a sensitive natural community (i.e., a community that is especially diverse; regionally uncommon; or of special concern to local, state, and federal agencies);
- substantial adverse effects on habitats that serve as breeding, foraging, nesting, or migrating grounds and are limited in availability or that serve as core habitats for regional plant and wildlife populations;
- interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- substantial adverse effect on important riparian habitats or wetlands and any other “Waters of the U.S.” or state jurisdictional waters; or
- conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

<u>Direct and Indirect Impacts and Mitigation</u>

The CEQA Guidelines define direct impacts as those impacts that result from the project and occur at the same time and place. Indirect impacts are caused by the project, but can occur later in time or farther removed in distance and are still reasonably foreseeable and related to the operation of the project. Direct or indirect impacts on biological resources could be permanent or temporary in nature. All impacts that result in the irreversible removal of biological resources are considered permanent. Any impact considered to have reversible effects on biological resources can be viewed as temporary.

This section evaluates the potential direct, indirect, permanent, and temporary impacts to biological resources from proposed HBEP construction and associated demolition activities, operation, maintenance, and decommissioning, and provides mitigation, as necessary, to reduce impacts to less than significant levels.

General Biological Resources Conditions of Certification

In order to avoid or minimize potentially adverse impacts to biological resources, staff recommends that a Designated Biologist and Biological Monitor(s) be employed to ensure impact avoidance and minimization measures described below and protection of sensitive biological resources described above are implemented. The selection criteria and minimum qualifications of the Designated Biologist and Biological Monitor(s) are described in staff's proposed Conditions of Certification **BIO-1** (**Designated Biologist Selection**) and **BIO-3** (**Biological Monitor Selection).** The duties and authority of the Designated Biologist and Biological Monitor are described in staff's proposed Condition of Certification **BIO-4** (**Designated Biologist and Biological Monitor Authority**). The Designated Biologist and/or Biological Monitor would be responsible, in part, for developing and implementing the Worker Environmental Awareness Program (WEAP) (see Condition of Certification **BIO-5**), which is a mechanism for training the on-site project construction and maintenance personnel and as well as project site visitors on the how to protect sensitive biological resources and the consequences of non-compliance.

Staff's proposed Condition of Certification **BIO-6** (**Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP)**) provides for the preparation of the BRMIMP, which consolidates all project resource mitigation, monitoring, and compliance measures, as well as other information necessary to ensure compliance with, and effectiveness of, all impact avoidance, minimization, and mitigation measures.

CONSTRUCTION AND DEMOLITION IMPACTS AND MITIGATION

Construction and Demolition Impacts to Native Vegetation

Construction and demolition impacts to vegetation could occur through the direct removal or crushing of plants by equipment or vehicles. As these impacts are generally localized and are primarily temporary, they are not usually considered significant unless the habitat type is regionally unique or is known to support special-status species.

The proposed project area is developed as industrial with disturbed habitat and ornamental landscaping. Regionally unique habitat or habitat capable of supporting special-status species is not present within the proposed project area. Construction and demolition activities would require the removal of weedy vegetation. Some ornamental plantings (landscaping) would be replaced by new plantings as part of a visual screening landscape plan, which is currently being developed by the applicant and the city of Huntington Beach in coordination with the Energy Commission (refer to the **Visual Resources** section of PSA Part A for additional information). Significant impacts to native vegetation would not occur and no mitigation is proposed.

Construction and Demolition Impacts to Common Wildlife

Direct loss of small mammals, reptiles, and other less mobile species could occur during construction of the proposed project and demolition of existing facilities. This would result primarily from the use of vehicles and equipment at the HBEP site, which could collapse underground burrows or drive over animals. Additionally, construction and demolition activities and increased human presence may temporarily disrupt breeding or foraging activities of some common wildlife species.

The proposed project area provides marginally suitable nesting habitat for a variety of common bird species. Birds could nest in the ornamental plantings along the perimeter of the HBEP site. Additionally, some bird species adapted to disturbed environments could nest in equipment or other available substrate in the areas within the HBEP site. The compacted dirt and sparse vegetation associated with the barren areas of the HBEP provide nesting substrate for small songbirds and some ground-nesting species (e.g., killdeer). Many adult birds would flee from equipment during project construction. However, nestlings and eggs of ground-nesting birds or birds nesting on ornamental trees, other landscaping, or equipment and facilities would be vulnerable to impacts during project construction. Nests, nestlings, and eggs of native birds are also protected by the MBTA and Fish and Game Code Sections 3503 and 3513. If initial site grading or vegetation removal in landscaped areas were to occur during nesting season, then it could destroy bird nests, including eggs or nestling birds.

The applicant has proposed to "conduct a preconstruction active nest survey within 100 feet of the HBEP site, and, if determined necessary, monitoring of[sic] active nests during construction/demolition activities will be performed if it is determined that active nests will be significantly disturbed by HBEP activities" (HBEP 2012a; p. 5.2-38). Staff agrees with the need for preconstruction nest surveys and has incorporated this into Condition of Certification **BIO-8** (Preconstruction Nest Surveys and Impacts Avoidance and Minimization Measures for Breeding Birds). This Condition would require a survey for birds in advance of work conducted between February 1 and August 31 and establishment of a no-disturbance buffer if a nest is identified. Additionally, general measures presented in Condition of Certification **BIO-7** (Impact Avoidance and Minimization Measures) (e.g., limit disturbance areas) would avoid and minimize impacts to nesting birds. With implementation of Conditions of Certification **BIO-7** and **BIO-8**, significant impacts to nesting birds would not result from proposed project construction and demolition activities and compliance with MBTA and California Fish and Game codes would be achieved.

Wildlife could become entrapped in open trenches during construction, especially if trenches remain open during inactive construction periods. Staff recommends Condition of Certification **BIO-7**, which would require exclusion measures for open trenches (e.g., fencing or covering), inspection of trenches prior to resuming construction activities each day, and installation of escape ramps so that animals that fall in the trench could escape. Implementation of this measure would mitigate adverse impacts to wildlife from entrapment.

An analysis of impacts to wildlife from noise and lighting is presented under "General Construction and Demolition Impacts", below.

Construction and Demolition Impacts to Special-Status Plant Species

Special-status plants recorded within one mile of the proposed HBEP site and offsite laydown area include southern tarplant (CRPR 1B.1), southwestern spiny rush (CRPR 4.2), and Salt Spring checkerbloom (CRPR 2B.2); see **Biological Resources Table 2**. Conditions in the proposed project area are not likely to support any special-status plants, and none have been recorded at either site. The proposed HBEP site and the offsite laydown area are within existing operating power generating plants, and are entirely developed brownfield sites with no natural habitat. Rare plants occur in the marshes adjacent to the HBEP site; however, recruitment into the project site would be unlikely and limited to landscaped or unpaved areas. Ongoing maintenance of landscaped areas, including weed eradication, would prevent any rare plants that did recruit onto the site from persisting. Therefore, direct impacts to special-status plants from construction would not occur and no mitigation is proposed.

Special-status plants that inhabit the adjacent Magnolia and Upper Magnolia marshes, such as southwestern spiny rush and southern tarplant, could be indirectly impacted from runoff of sediment or toxic substances from the project site, dust, or spread of invasive weeds during construction and demolition. These potential impacts are discussed under “General Construction and Demolition Impacts”, below.

Construction and Demolition Impacts to Special-Status Wildlife

Wildlife habitat in the project area has been significantly fragmented by urban development. The HBEP site, offsite laydown area at AGS, and the offsite parking areas near the HBEP site are located in developed areas; therefore, there would be no direct impacts resulting from disruption of wildlife movement, or habitat loss or fragmentation. Although not recorded on site, the monarch butterfly could potentially roost in landscaping trees on the HBEP site. However, given the low probability of this occurring, impacts to monarch butterflies are less than significant and mitigation is not warranted.

Although most special-status wildlife species are not expected to occur at the project site or offsite parking and laydown areas, several may forage, roost, or breed in nearby marshes including the wandering skipper, hoary bat, and western mastiff bat. Indirect impacts could occur to special-status wildlife in the marshes adjacent to and near the HBEP site during construction and demolition. These include disturbance from noise, and lighting, as well as degradation of habitat from invasive weeds, stormwater runoff, or groundwater contamination. These impacts are discussed under “General Construction and Demolition Impacts”, below.

Construction and Demolition Impacts to Jurisdictional Wetlands and Waters

The proposed HBEP would not result in direct loss or fill of any jurisdictional wetlands or waters, as there are none present within the project area.

The proposed HBEP site and offsite laydown area are immediately adjacent to Magnolia Marsh and Los Cerritos wetlands, respectively, which are jurisdictional estuarine and marine wetlands as determined during permitting for prior restoration activities. Indirect impacts may result if construction contaminants, sediment, or untreated stormwater effluent from the proposed project area enter these sensitive areas. The applicant has committed to implementing Best Management Practices (BMPs) to control site runoff during construction and demolition activities in accordance with the project’s Stormwater Pollution Prevention Plan (SWPPP); this is subsumed as a requirement of Condition of Certification **SOIL&WATER-1**. With implementation of these measures, indirect water quality impacts to adjacent wetland habitats would be less than significant.

General Construction and Demolition Impacts

Noise

Noise from construction and demolition activities could discourage sensitive wildlife from foraging and nesting near the proposed project area. Many bird species rely on vocalizations during the breeding season to attract a mate within their territory, and noise from construction could adversely affect nesting behavior and other activities.

Special-status species that may be affected by construction and demolition noise are those that potentially occur in the adjacent Huntington Beach Wetlands Conservancy's Coastal Marsh Restoration Complex (Magnolia Marsh, Brookhurst Marsh, Talbert Marsh, and Newland Marsh). These marshes support a variety of special-status birds including the Belding's savannah sparrow (state-listed endangered), light-footed clapper rail (federally and state-listed endangered), western snowy plover (federally listed threatened), California least tern (federally and state-listed endangered), and California brown pelican (state fully protected). Another sensitive wildlife receptor is the Wildlife Care Center, which houses rehabilitating birds and wildlife in open air enclosures approximately 25 feet southeast of the proposed HBEP site.

Magnolia Marsh is approximately 300 feet southeast of the proposed location for HBEP Block 1 and 700 feet from HBEP Block 2. Brookhurst Marsh is approximately 1,355 feet southeast of Block 1. Newland Marsh is approximately 1,385 feet southwest of Block 1. Talbert Marsh is approximately 4,831 feet southeast of Block 1. Other protected areas are further than one mile from the project area and are not considered further in this noise impact analysis.

Ambient noise levels measured by the applicant were consistently between 60 and 66 A-weighted decibels (dBA) at the wetland pier within Magnolia Marsh (receptor M5) near Highway 1 and between 50 and 57 dBA at the HBEP boundary adjacent to the marsh and further inland (receptor M6) (HBEP 2013c). Energy Commission staff calculated the average Leq noise level at these two receptors in Magnolia Marsh using the applicant's ambient noise survey data (HBEP 2012a). Accordingly, average Leq[1] is 61 dBA at the M5 and 54 dBA at M6 (refer to the **Noise** section of PSA Part A for methods and additional information). This demonstrates that Magnolia Marsh experiences varying levels of ambient noise, depending on location. The ambient noise level at the Wildlife Care Center is unknown; staff requests that a 25-hour continuous ambient noise survey be conducted at the Wildlife Care Center and results provided as an average Leq.

The average construction and demolition noise level at 375 feet from the noise source is estimated to be 71 dBA. Pile driving is the loudest construction activity; it is estimated to be 86 dBA at 375 feet from the noise source (HBEP 2012a; p 5.7-9). These noise levels would be audible within Magnolia Marsh, which is 300 feet from HBEP power block 1 and much louder at the Wildlife Care Center, which is 25 feet southeast of the HBEP site boundary. Average construction noise and pile driver noise would attenuate to 59 dBA and 74 dBA at 1,500 feet from the noise source, respectively; these estimates are

[1] Leq is the average noise level provided in long term measurements.

slightly less than the noise levels that would be audible within Newland Marsh and Brookhurst Marsh, which are approximately 1,350 feet from power block 1.

Studies have shown that noise levels over 60 dBA can affect the behavior of certain bird species and could interfere with acoustic communication (e.g., Dooling and Popper 2007). Noise may affect birds in several ways, including reducing reproductive success; raising the level of stress hormones; interfering with sleep; cause permanent injury to the auditory system; and interfering with acoustic communication by masking important sounds, such as an approaching predator (Halfwerk et al 2011; Dooling 2006; Kight and Swaddle 2011). Many bird species rely on vocalizations during the breeding season to attract a mate within their territory. Francis et al. (2009) showed that noise alone reduced nesting species richness and led to a different composition of avian communities. Although some birds are able to shift their vocalizations to reduce the masking effects of noise, when shifts did not occur or were insignificant, masking could impair signaling and listening capabilities necessary for successful communication and survival (Barber et al. 2010).

Construction and demolition noise would occur over nine years in close proximity to the Magnolia Marsh, Upper Magnolia Marsh and Wildlife Care Center. As described above, average levels of construction and demolition noise would continuously be well above 60 dBA throughout Upper Magnolia Marsh and most of Magnolia Marsh. Some areas of the marshes currently experience ambient noise levels above 60 dBA; it is expected that birds present in these areas have acclimated to elevated noise. However, average construction and demolition would further increase noise levels in these areas and would potentially result in the effects described above. When pile driving occurs, noise levels would be much higher and noise impacts to avian behavior could extend to the Newland and Brookhurst marshes. Pile driving is an intermittent noise that would be particularly startling and disruptive to wildlife. Elevated construction and demolition noise would be a significant source of stress to rehabilitating wildlife at the Wildlife Care Center adjacent to the project area. Resultant noise impacts to wildlife would be significant without mitigation.

To mitigate noise impacts to wildlife, construction and demolition noise must be reduced to ambient levels, or no more than 60 dBA in areas where the ambient noise levels are below 60 dBA, at the following noise-sensitive receptors: Magnolia Marsh, Upper Magnolia Marsh, Brookhurst Marsh, Newland Marsh, and the Wildlife Care Center. To achieve this, the applicant could implement a combination of the following noise-reduction measures:

- temporary and permanent noise barriers, such as sound walls;
- reduction of speed limits;
- prohibition of “jake-breaking”;
- replacement and updating of noisy equipment;
- moveable task noise barriers;
- queuing trucks to distribute idling noise;

- locating vehicle access points and loading and shipping facilities away from noise-sensitive receptors;
- reducing the number of noisy construction activities occurring simultaneously;
- placing noisy stationary construction equipment in acoustically engineered enclosures and/or relocating them away from noise-sensitive receptors;
- reorienting and/or relocating construction equipment to minimize noise at noise-sensitive receptors, pursuant to Condition of Certification **NOISE-6**; and/or
- performing pile driving with quieter equipment, pursuant to Condition of Certification **NOISE-9**.

Staff requests that the applicant provide updated construction noise modeling that incorporates some or all of these noise-reduction measures to demonstrate that estimated construction and demolition noise would not exceed ambient levels, or no more than 60 dBA in areas where the ambient levels are below 60 dBA at the noise-sensitive receptors identified above. Noise data should consider overlapping construction, demolition and operation. Without this data, staff is unable to determine whether noise impacts to wildlife can be mitigated below a level of significance.

Staff is currently working with USFWS, CDFW, and species experts to identify additional measures, including seasonal limited activity periods and bird monitoring, to minimize impacts in areas where the ambient or 60 dBA performance standard cannot be achieved. Vibration impacts to wildlife are not well-studied but may also result in significant impacts; staff is investigating this issue in coordination with the wildlife agencies.

Lighting

HBEP construction and demolition activities would typically occur between 6:00 a.m. and 6:00 p.m. Monday through Saturday; however, during some construction periods and during the start-up phase of the project, construction activities would continue 24 hours a day and seven days a week. Bright lighting at night could disturb the nesting, foraging, or mating activities of wildlife in the adjacent marshes and make wildlife more visible to predators. Night lighting could be disorienting to migratory birds and, if placed on tall structures, may increase the likelihood of collision. Although existing operations at the Huntington Beach Generating Station and traffic on Highway 1 provide an elevated ambient level of lighting to which local species have acclimated, potentially significant impacts to sensitive wildlife from increased night lighting could occur.

If night construction were required, the applicant proposes to use task-specific lighting to the extent practicable, shield and direct lighting onsite, and use switched lighting where possible (HBEP 2012a, p. 5.13-17). These measures are incorporated into Condition of Certification **VIS-2** (refer to the **Visual Resources** section of PSA Part A for the full text of this condition). With implementation of these measures, impacts to wildlife from construction night lighting would be less than significant.

Construction Dust

Active soil grading would occur over a four-month period within each unit after demolition. The soil in these disturbed areas would then be exposed for an additional 38-month construction period, after which the majority of the site would be paved or covered with the new HBEP Block 1 and 2 facilities. It is estimated that approximately a quarter of the project site would have bare soil exposure during the construction period. Disturbance of the soil's surface caused by construction traffic and other activities would result in increased wind erosion of the soil. Dust can have deleterious physiological effects on plants in the Huntington Beach Wetland complex, especially the adjacent Magnolia Marsh, and may affect their productivity and nutritional qualities. Additionally, the Los Cerritos wetlands are adjacent to the unpaved offsite laydown area, and dust generated at that site can impact plants in the wetlands. Erosion control BMPs developed in accordance with the SWPPP will be used to minimize erosion at the site during HBEP construction and demolition activities, pursuant to Condition of Certification **SOIL&WATER-1**. These erosion-control measures would maintain water quality, protect property from erosion damage, and prevent accelerated soil erosion or dust generation that destroys soil productivity and soil capacity. Typically, these measures include mulching, physical stabilization, dust suppression, berms, ditches, and sediment barriers. Upon completion of HBEP construction and demolition activities, land surfaces will be permanently stabilized.

The applicant has proposed mitigation measures to reduce the fugitive dust emissions during construction of the project (HBEP 2012a). In Part B of this PSA, staff will also propose an air quality condition of certification to avoid and minimize impacts of dust generated by construction and demolition activities. With implementation of these measures, impacts to adjacent wetlands from construction-related dust would be less than significant.

Invasive Weeds

The spread of invasive weeds destroys wildlife habitat and forage, threatens endangered species and native plants, and increases soil erosion and groundwater loss. Construction activities and soil disturbance could introduce new invasive weeds to wetlands adjacent to the HBEP site, and could further spread weeds already present in the project vicinity. Wetlands adjacent to and near the project site support special-status species and other native plants and wildlife. The Magnolia Marsh, adjacent to the southeastern boundary of the project site, is in the process of undergoing restoration, which began in 2010, and is therefore particularly vulnerable to weed infestations as it is not yet fully established. Invasive weeds can easily colonize areas of disturbance and the spread of invasive plants is a major threat to biological resources in the Huntington Beach Wetland Complex because non-native plants can displace native plants and supplant wildlife foods that are important to herbivorous species, resulting in overall habitat degradation.

No substantial invasive weed populations exist within the proposed project area. However, to avoid and minimize the spread of existing weeds and the introduction of new ones, weed management measures are proposed. Staff's proposed Condition of Certification **BIO-7** includes a number of weed prevention measures, including the requirement that vegetation and ground disturbance be limited to the minimum required for construction of the project, and that ingress/egress be only along defined routes. Stormwater runoff would be contained and prevented from draining to adjacent sensitive habitats; therefore weed propagules would be prevented from washing into the wetlands. Further, straw bales and other sediment control features will be weed free, and invasive non-native species are prohibited from being used as landscape plantings. Implementation of Condition of Certification **BIO-7** would reduce potential impacts from introduction and spread of invasive weeds into sensitive habitat to less than significant.

Stormwater Runoff

There are no creeks, drainages, wetlands, or other aquatic resources on the project site, offsite laydown area, or offsite parking areas. However, marshes adjacent to the proposed HBEP site could be impacted from stormwater runoff during construction and demolition if appropriate measures are not taken to prevent water from draining off site. Toxic materials washed from the site into adjacent marshes can injure or kill wildlife and vegetation, and degrade habitat. During construction and demolition, the existing stormwater collection system would collect process stormwater from the project site and route it to the oil/water separator before discharge to the Pacific Ocean via an existing NPDES permitted outfall. The applicant has committed to the following measures to avoid, minimize, and mitigate potential impacts from construction and operational stormwater runoff (HBEP 2012c):

- The project owner shall not allow water containing mud, silt, or other pollutants from grading, aggregate washing, or other activities to enter the adjacent wetlands or be placed in locations that may be subjected to high storm flows.
- Spoil sites shall not be located within drainages or locations that may be subjected to high storm flows, where spoil has the potential to be washed back into the adjacent wetlands.
- Raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances that could be hazardous to vegetation or wildlife resources, resulting from project-related activities, shall be prevented from contaminating the soil and/or entering the adjacent wetlands. These materials, placed within or where they may enter the adjacent wetlands by the project owner or any party working under contract or with the permission of the project owner shall be removed immediately.
- No broken concrete, debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or washings thereof, oil or petroleum products, or other organic or earthen material from any construction or associated activity of whatever nature shall be allowed to enter into, or placed where it may be washed by rainfall or runoff into, the adjacent wetlands.
- When construction is completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 200 feet of the adjacent wetlands.
- No equipment maintenance shall occur within 200 feet of the adjacent wetlands where petroleum products or other pollutants from the equipment may enter these areas under any flow condition.

In addition, staff's proposed Condition of Certification **BIO-7** (**Impact Avoidance and Minimization Measures**) would require standard BMPs from the project SWPPP to be implemented during all phases of the proposed project to control storm water runoff. BMPs include installation of silt fencing, berms, hay bales, and detention basins to control runoff from construction and demolition areas. Sediment barriers such as straw bales or silt fences would be installed to slow runoff and trap sediment. Only certified weed free materials will be used for erosion control. Staff is also proposing Condition of Certification **SOIL&WATER-1,** in which the project owner would be required to develop and implement a site-specific construction SWPPP. With implementation of these measures and the applicant's commitment to the impact minimization measures listed above, project impacts to biological resources from stormwater runoff would be less than significant.

Groundwater Contamination

Groundwater was observed during exploratory borings for the project at a depth of approximately 14 feet. The observed groundwater depths are not considered stabilized groundwater depths. The California Geologic Survey Seismic Hazard Zone report for this area indicates that the historic high groundwater in the vicinity of the site is approximately 3 feet below the ground level. Groundwater underlying the project site has been documented to be impacted by metals, volatile organic compounds, and 1,4-dioxane from current and past industrial operations at this location (HBEP 2012c). Therefore, marshes adjacent to the proposed HBEP may already be exposed to this contamination. If groundwater were contaminated by HBEP construction activities (including spills of toxic materials from equipment leakage), adverse effects to vegetation and wildlife in the adjacent Magnolia and Newland Marshes could occur. Such construction impacts would be minimized through implementation of a SWPPP and associated BMPs (pursuant to Condition of Certification **SOIL&WATER-1)**. Implementation of Condition of Certification **SOIL&WATER-1** would minimize or avoid the potential for adverse impacts to vegetation and wildlife in adjacent marshes from groundwater contamination and this impact would be less than significant.

OPERATION IMPACTS AND MITIGATION

Noise

The proposed HBEP is on an industrial site and is near other industrial land uses and Highway 1. However, it is also located adjacent to sensitive biological resources including marshes with the potential to support threatened and endangered birds and the Wetlands and Wildlife Care Center, which houses rehabilitating wildlife in open air enclosures. The existing Huntington Beach Generating Station, urban development, and roadways in the area are existing sources of noise.

Excessive noise masks auditory cues from other birds, including potential mates, and approaching predators. Chronic exposure to excessive noise has been demonstrated to negatively affect foraging behavior, reproductive success, population density, and community structure (Habib et al. 2007; Bayne et al. 2008; Barber et al. 2010).

Based on the applicant's Figure DR PYLE 6-1 (Estimated HBEP Operational Sound Level Contours), estimated operational noise from the HBEP would be between 65 and

47 dBA at Upper Magnolia and Magnolia marshes (HBEP 2012d). At the wetland pier within Magnolia Marsh (receptor M5) operational noise is estimated to be 59 dBA. At the HBEP boundary adjacent to the marsh (receptor M6) operational noise is estimated to be 57 dBA. This represents a one dBA decrease at M5 and a six dBA increase at M6 above ambient conditions, although neither would be above 60 dBA. Operational noise impacts to wildlife within Upper Magnolia and Magnolia marshes are less than significant.

The operational noise level at the Wildlife Care Center is estimated to be between 67 and 69 dBA. It is unknown what the ambient noise levels are at this receptor so staff is unable to determine whether this would be a significant change (staff has requested an ambient noise survey at this receptor; see "Construction Noise", above). As described in the **Noise** section of PSA Part A, staff is recommending Condition of Certification **NOISE-4** to reduce operational noise at residential noise-sensitive receptors. To assess operational noise impacts to rehabilitating wildlife at the Wildlife Care Center, staff requests that the applicant conduct noise modeling that assumes implementation of Condition of Certification **NOISE-4** as well as any applicant-proposed noise reduction measures and provide the estimated operational noise level at the Wildlife Care Center in average Leq.

Lighting

The existing Huntington Beach Generating Station and vehicles traveling on Highway 1 provide an elevated ambient level of light to which local wildlife have adapted. However, excessively bright lighting at night could disturb the nesting, foraging, or mating activities of wildlife in the adjacent marsh and make wildlife more visible to predators. Also, night lighting could be disorienting to migratory birds and, if placed on tall structures, may increase the likelihood of collision, as discussed below.

The applicant states that operational lighting for the proposed HBEP may be slightly less than that of the existing Huntington Beach Generating Station (HBEP 2012a; p 5.13-17). To minimize backscatter of light to the sky and ensure that lighting does not obtrude beyond the project site, staff proposes Condition of Certification **VIS-3** (refer to the **Visual Resources** section of PSA Part A for the full text of this condition). Impacts to wildlife from proposed operation night lighting are potentially adverse, but less than significant.

Avian Collision and Electrocution

The adjacent marshes are concentration areas for resident and migratory birds because of abundant foraging opportunities and proximity to the Pacific Ocean. This concentration of birds creates the potential for direct impacts through collision or electrocution with proposed HBEP facilities and appurtenant structures including transmission lines and transmission support structures.

Birds can collide with transmission lines, exhaust stacks, and other structures associated with the proposed project, causing injury or mortality. Bird collisions with power lines and structures generally occur when a power line or other structure transects a daily flight path used by a concentration of birds and these birds are traveling at reduced altitudes and encounter tall structures in their path (Brown 1993).

Collision rates generally increase in low light conditions, during inclement weather, during strong winds, and during panic flushes when birds are startled by a disturbance or are fleeing danger. Collisions are more probable near wetlands, within valleys that are bisected by power lines, and within narrow passes where power lines run perpendicular to flight paths (APLIC 2012).

Although collision may occur, it is not likely that bird mortality due to collision with HBEP transmission lines and facilities would significantly reduce the population numbers of any bird species or that the reduction in numbers within any population would impair its function within the local ecosystem. The proposed HBEP exhaust stacks would be much shorter than 350 feet (the height above which is considered dangerous to migrating birds), and shorter than the existing built environment (e.g., Huntington Beach Generating Station exhaust stacks). The reduction in height of the exhaust stacks would result in a lower risk of bird collision with this project feature compared with existing conditions.

HBEP would connect to the regional electrical grid using the existing SCE 230-kV switchyard located on a parcel owned by SCE within the existing Huntington Beach Generating Station site. No new offsite transmission lines are proposed. HBEP Blocks 1 and 2 would connect into the existing SCE switchyard via new double-circuit 230-kV lines. Direct and indirect impacts to birds from collision with structures are expected to be minimal and consistent with baseline conditions, given the project location and existing power lines, tall structures, and facilities on the site.

Osprey and other large aerial perching birds, including those afforded state and/or federal protection, are susceptible to transmission line electrocution. Because raptors and other large perching birds often perch on tall structures that offer views of potential prey, the design characteristics of transmission towers and poles are a major factor in raptor electrocutions (APLIC 2012). Electrocution occurs when a bird simultaneously contacts two energized phase conductors or an energized conductor and grounded hardware. This happens most frequently when a bird attempts to perch on a transmission tower or pole with insufficient distance between these elements.

Raptor species that use the transmission structures for nesting could be electrocuted upon landing. Further, nests may be built in areas that are susceptible to electrical charges that may result in fire as well as electrical outage. The majority of raptor electrocutions are caused by lines that are energized at voltage levels between 1-kV and 60-kV. The likelihood of electrocutions occurring at voltages greater than 60-kV is low because phase-to-phase and phase-to-ground clearances for lines greater than 60-kV are typically sufficient to prevent bird electrocution (APLIC 2006). Therefore, the new 230-kV onsite transmission lines that would connect HBEP Blocks 1 and 2 to the onsite SCE substation have a low likelihood to result in bird electrocution.

The new onsite generation tie lines, while posing a collision risk to birds, would be entirely within the site that is already developed with existing transmission lines as well as tall structures associated with the existing generation facility and construction of the HBEP generation tie lines would not appreciably increase collision risk over baseline conditions. Additionally, the reduction in height of the exhaust stacks associated with the proposed HBEP would result in reduced collision potential. Nonetheless, because of the presence of listed species in the adjacent marshes, and the likelihood that they and other special-status birds fly over the project site en route to the marshes, staff proposes that the project owner construct the generation tie lines in accordance with Avian Power Line Interaction Committee (APLIC) standards to minimize or avoid collisions and electrocutions associated with the proposed project. With implementation of this component of Condition of Certification **BIO-7 (Impact Avoidance and Minimization Measures)**, this impact would be less than significant.

Stormwater Runoff

Stormwater runoff from open areas on the proposed HBEP site during operation would be conveyed to an onsite detention basin before discharge to the Pacific Ocean via an existing NPDES permitted outfall. Stormwater runoff would be conveyed in accordance with NPDES General Industrial Permit requirements. For more information on water quality impacts, please see the **Soil and Water Resources** section of PSA Part A.

There are no creeks, drainages, wetlands, or other aquatic resources on site. Adjacent wetlands could be impacted from stormwater runoff if appropriate measures are not taken to prevent water from draining off site. Toxic materials washed from the site into adjacent sensitive marsh lands can injure or kill wildlife and vegetation, and degrade habitat. The applicant has committed to BMPs to avoid, minimize, and mitigate potential impacts from construction and operational stormwater runoff (HBEP 2012c). These measures are described above under "General Construction and Demolition Impacts – Stormwater Runoff". In addition, staff's Condition of Certification **BIO-7** (**Impact Avoidance and Minimization Measures**) would require BMPs from the project SWPPP to be implemented during all phases of the proposed project to control stormwater runoff. BMPs include installation of silt fencing, berms, hay bales, and detention basins to control runoff from the project area. Sediment barriers such as straw bales or silt fences would be installed to slow runoff and trap sediment where necessary. Only certified weed free materials will be used for erosion control. Staff is also proposing Condition of Certification **SOIL&WATER-4,** in which the project owner would be required to obtain a National Pollutant Discharge Elimination System permit for industrial waste and stormwater discharge to the Pacific Ocean through the existing outfall currently utilized by the Huntington Beach Generating Station. With implementation of these measures and the applicant's commitment to the BMPs described above, potential project impacts from stormwater runoff during operation would be less than significant.

Air Emissions – Nitrogen Deposition

Nitrogen deposition is the input of nitrogen oxide (NO_x) and ammonia (NH_3) derived pollutants, primarily nitric acid (HNO_3), from the atmosphere to the biosphere. Nitrogen deposition sources are primarily industrial and vehicle emissions, including power plants. Mechanisms by which nitrogen deposition can lead to impacts on sensitive species include direct toxicity, changes in species composition among native plants, and enhancement of invasive species (Fenn et al. 2003; Weiss 2006). The increased dominance and growth of invasive annual grasses is especially prevalent in low biomass vegetation communities that are naturally nitrogen-limited, such vegetation communities that occur in the project vicinity include intertidal salt marshes, intertidal wetlands, freshwater marsh/wetlands, coastal dunes, chaparral, coastal sage scrub, oak

woodlands, vernal pools, and serpentine grassland (Weiss 2006). Some of these vegetation types support critical habitat for coastal California gnatcatcher, San Diego fairy shrimp, and western snowy plover.
An Energy Commission Public Interest Energy Research study modeled total nitrogen deposition throughout California (Tonneson et. al. 2007); results showed that most of California experiences elevated rates of annual nitrogen deposition, especially near urban areas. Baseline nitrogen deposition rates in critical habitat within the area affected by HBEP emissions are estimated to be as follows (in kilograms of nitrogen per hectare per year; Tonneson et. al. 2007):

- California gnatcatcher critical habitat: 2.07 to 2.18 kg/ha/yr
- San Diego fairy shrimp critical habitat: 2.07 to 13.45 kg/ha/yr
- Western snowy plover critical habitat: 2.18 to 11.09 kg/ha/yr

Excessive nitrogen deposition is strongly correlated with the growth of non-native vegetation (Huenneke et al. 1990; Inouye and Tilman 1995; Weiss 1999; Bowman and Steltzer 1998; Brooks 2003) and field studies have found that nitrogen fertilization in sites with elevated nitrogen deposition will enhance grass invasion (Rillig et al 1998; Brooks 2003). Several recent studies have attempted to quantify the critical load or rate at which nitrogen deposition begins to result in adverse effects to nitrogen-sensitive ecosystems. Critical loads in habitats affected by HBEP emissions may range from approximately 2 to more than 10 kg/ha/yr (e.g., Pardo et al. 2011).

In response to Data Requests 23-26, the applicant modeled project-specific and cumulative nitrogen deposition rates (HBEP 2013b). Based on the South Coast Air Quality Management District's recommendation to use a new meteorological dataset for the dispersion modeling, these data request responses must be updated and resubmitted to staff. It is anticipated that the updated responses will be filed in early October (applicant's status report #5). After receiving the data, staff will perform an independent assessment of its accuracy, including modeling, to verify the applicant's results. This information is unavailable for inclusion in the PSA and staff is unable to reach a conclusion on impacts to biological resources from nitrogen deposition.

CUMULATIVE EFFECTS

Cumulative impacts are those that result from the incremental impacts of a proposed action considered with other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over time.

A project may result in a significant adverse cumulative impact if its effects are cumulatively considerable. There are currently proposed projects near the HBEP that may impact local biological resources, especially those in and near the Huntington Beach Wetlands Complex and other regional wetlands. These projects include the Poseidon Desalination Plant, Ascon Landfill Site, Newland Street widening project, P2-92 Sludge Dewatering and Odor Control, and the Brightwater Project.

Due to ongoing operation of the Huntington Beach Generating Station, the proposed HBEP site is highly disturbed, is devoid of natural vegetation, and does not provide suitable habitat for special-status species. The Poseidon Desalination Plant is an unrelated project that is planned on a portion of the Huntington Beach Generating Station property. As with the HBEP, the Poseidon Desalination Plant would not be likely to have direct impacts to special-status species or other biological resources, as special-status species are unlikely to occur on this industrial brownfield site. However, construction of the proposed project and the Poseidon project may overlap, and cumulative indirect impacts to sensitive biological resources and special-status species could occur. These cumulative impacts could include disruption from lighting, spread of invasive weeds, and stormwater runoff. Implementation of Conditions of Certification **BIO-1** through **BIO-7** would minimize or avoid construction-related impacts from lighting, spread of invasive weeds, and stormwater runoff from the HBEP, and the Poseidon project would be required to implement similar measures (City of Huntington Beach 2005). Once operational, the HBEP would not result in a substantial change from baseline conditions for most biological resources. Therefore, the HBEP would not contribute considerably to most cumulative impacts to biological resources.

Without additional information from the applicant, staff is unable to assess the HBEP’s contribution to cumulative nitrogen deposition, operational noise impacts at the Wildlife Care Center, and construction noise impacts to special-status and rehabilitating wildlife. Staff anticipates receiving this information and incorporating it into the Final Staff Assessment.

FACILITY CLOSURE

When the HBEP is closed in the future, whether planned or unexpected, it must be done so that closure activities protect the environment and public health and safety. A closure plan would be prepared by the project owner prior to any planned closure. To address unanticipated facility closure, an “on-site contingency plan” would be developed by the project owner and approved by the Energy Commission compliance project manager (CPM). Facility closure requirements are discussed in more detail in the **Compliance Conditions** section of PSA Part A. Facility closure mitigation measures would also be included in the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) prepared by the project owner and described in staff’s proposed Condition of Certification **BIO-6.**

Upon decommissioning and permanent facility closure, reclamation would be necessary to prevent adverse effects such as contamination from hazardous substances, erosion, dust, invasion and spread of weeds, and hazards to wildlife from abandoned project infrastructure. Staff concludes that these potential effects of facility closure and decommissioning would be a significant impact absent mitigation. Decommissioning activities are likely to cause similar indirect impacts to adjacent sensitive biological resources as described above for the construction and demolition phases of the proposed project.

To ensure that public health and safety and the environment are protected during decommissioning, the applicant has committed to developing a decommissioning plan that would be submitted to the Energy Commission for approval prior to decommissioning (HBEP 2012a). If possible, unused chemicals would be sold back to the suppliers or other purchasers or users. All equipment containing chemicals would be drained and shut down to ensure public health and safety and to protect the environment. All nonhazardous wastes would be collected and disposed of in appropriate landfills or waste collection facilities. All hazardous wastes would be disposed of according to all applicable LORS.

As described above, decommissioning and site closure would likely result in similar types of impacts to biological resources as construction and demolition. It is anticipated that conditions of certification similar to **BIO-1** through **BIO-8** would minimize or avoid these impacts to biological resources, and impacts to biological resources would be less than significant.

COMPLIANCE WITH LORS

The proposed project must comply with LORS that address state and federally listed species, as well as other sensitive biological resources. Applicable LORS are described in **Biological Resources Table 1**.

The proposed project would comply with most LORS pertaining to biological resources. However, without additional information from the applicant, staff is unable to reach conclusions on the significance of nitrogen deposition impacts to critical habitat and construction noise impacts to special-status birds. Therefore it is currently unknown whether the proposed project would comply with the federal and state endangered species acts, Migratory Bird Treaty Act, and California Fish and Game Code sections pertaining to protection of Fully Protected species and nesting birds.

The proposed project would not result in loss or fill of wetlands or waters of the U.S or state, as there are none present on site. Indirect impacts resulting from degradation of adjacent wetlands and coastal waters from construction runoff or operational discharges would be less than significant with implementation of Conditions of Certification **SOIL&WATER-1**, **SOIL&WATER-3**, **SOIL&WATER-4**, and **BIO-7**. These conditions would ensure compliance with the federal Clean Water Act, California Fish and Game Code 1600 et seq., California Coastal Act, and the Porter Cologne Water Quality Act by requiring control of runoff from the project area and operational discharges to be treated in accordance with NPDES permit requirements.

NOTEWORTHY PUBLIC BENEFITS

The HBEP would not use ocean water for cooling, as is currently in use for the Huntington Beach Generating Station. Therefore, the HBEP would eliminate the potential for entrainment of aquatic species. In addition, there would be a decrease in discharge via the existing NPDES-permitted outfall compared with current use levels. For the site monthly maximum average ambient temperature conditions, discharge to the existing outfall would be approximately 29 gallons per minute or approximately 11.6 million gallons per year, compared to approximately 98 billion gallons per year from the existing Huntington Beach Generating Station. The reduction in outfall discharge into the Pacific Ocean and the elimination of impingement and entrainment of marine organisms is a noteworthy environmental public benefit.

PUBLIC AND AGENCY COMMENTS

The following is a summary of scoping comments addressing biological resources received on the HBEP from interested agencies and the public. These comments aided in defining the scope and content of the analysis of impacts to biological resources, and are incorporated herein.

California Coastal Commission; August 3, 2012; TN#66483

The Coastal Commission requested additional information on biological resources beyond what was included in the AFC, as well as additional information about project-related noise on nearby sensitive species. It also recommended exploring alternative site layout arrangements to locate high noise-generating equipment farther from the adjacent wetlands to minimize impacts to sensitive birds that breed nearby.

U.S. Fish and Wildlife Service; September 10, 2012; TN#67075

The USFWS commented on listed and other sensitive species that utilize the Huntington Beach Wetlands, including the light-footed clapper rail and Belding's savannah sparrow. The USFWS identified potential impacts to sensitive species and provided suggestions for avoidance and minimization measures to avoid impacts from construction disturbance, noise, lighting, dust, trash (especially attraction of crows, which are predators of the least tern that nests nearby), site runoff, and nitrogen deposition.

Residents for Responsible Desalination, Huntington Beach, CA; September 17, 2012; TN#67170

The commenter expressed concern that noise generated by the HBEP, combined with noise from the Poseidon Desalination Plant proposed at the same site, would affect nesting birds.

Huntington Beach Wetlands Conservancy; December 3, 2012; TN#68793

The Conservancy explained that its Wetlands & Wildlife Care Center is immediately south of the proposed project. The property houses an interpretive and education center and a regional wildlife care facility for the treatment of sick and injured wildlife. The Conservancy expressed concern that noise and vibration from the demolition and reconstruction of the HBEP would adversely affect wildlife at the facility, which is housed in outdoor cages, and may disrupt use of its interpretive center. The Conservancy requested that noise be minimized and that mitigation measures should be required to address these concerns. The Conservancy also described the fully restored Upper Magnolia Marsh and requested that impacts on this wetland area be addressed.

City of Huntington Beach; December 6, 2012; TN#68804

The city of Huntington Beach clarified details about the California least tern nesting location at Huntington Beach State Park, identified that the description of LORS in AFC Table 5.2-1 does not mention the required 100-foot buffer from environmentally sensitive habitat, and corrects the site designation in the Huntington Beach General Plan that was misidentified in the AFC Biological Resources chapter. The city also identified several policies, standard plans, and development and use requirements excerpted from the City of Huntington Beach Zoning & Subdivision Ordinance and Municipal Codes and noted that this list is in addition to any "conditions of approval" that might adopted by the City Planning Commission but for the California Energy Commission's permit process.

CONCLUSIONS

The project site and offsite laydown area are industrial brownfield sites with operating power plants, and vegetation is limited to weedy species and landscaping. Rare plants and special-status wildlife are not expected to occur onsite; however, nearby marshes and other natural areas support special-status birds including the Belding's savannah sparrow (state-listed endangered), light-footed clapper rail (federally and state-listed endangered), western snowy plover (federally listed threatened), California least tern (federally and state-listed endangered), and California brown pelican (state fully protected). Another sensitive wildlife receptor is the Wildlife Care Center, which houses rehabilitating birds and wildlife in open air enclosures approximately 25 feet southeast of the proposed HBEP site. Given the proximity of the proposed project to the aforementioned biological resources, construction and operation would result in the direct and indirect effects presented in **Biological Resources Table 3**.

Biological Resources Table 3
Summary of Impacts to Biological Resources from the HBEP

Impact	Condition of Certification	Significance Determination
CONSTRUCTION IMPACTS		
Native vegetation: removal of native vegetation	None	Less than significant
Common wildlife: disturbance and injury or mortality to common wildlife, including nesting birds	• **BIO-7** limits disturbance area; • **BIO-8** requires pre-construction nest surveys and impact avoidance	Less than significant with conditions of certification
Special-status plants: degradation from runoff of sediment or toxic substances from the project site, damage from dust, spread of invasive weeds	• **BIO-7** controls invasive weeds; • **SOIL&WATER-1** requires preparation of a SWPPP to control runoff and prevent contamination; • air quality condition requiring dust abatement (PSA Part B)	Less than significant with conditions of certification
Special-status wildlife: disturbance from noise and lighting, habitat degradation from invasive weeds, stormwater runoff, or groundwater contamination	• **BIO-7** confines work to delineated areas and controls invasive weeds; • **BIO-8** requires pre-construction nest surveys and impact avoidance; • **SOIL&WATER-1** requires	**Noise:** Uncertain pending applicant information **Lighting, Weeds, Stormwater, Groundwater:** Less than significant with

Impact	Condition of Certification	Significance Determination
	preparation of a SWPPP to control runoff and prevent contamination; • **VIS-2** minimizes offsite lighting	conditions of certification
Jurisdictional wetlands and waters: degradation from runoff of sediment or toxic substances from the project site	• **SOIL&WATER-1** requires preparation of a SWPPP to control runoff and prevent contamination;	Less than significant with condition of certification
Noise: disturbance resulting in mortality or decreased productivity of special-status birds and rehabilitating wildlife	• **BIO-8** requires pre-construction nest surveys and impact avoidance;	Uncertain pending applicant information
Lighting: disturbance resulting in altered behavior or increased predation	• **VIS-2** minimizes offsite lighting	Less than significant with condition of certification
Dust: decreased plant productivity or nutritional quality	• **SOIL&WATER-1** prevents soil erosion; • air quality condition requiring dust abatement	Less than significant with conditions of certification
Invasive weeds: threaten marsh restoration, destroy wildlife habitat and forage, increase soil erosion	• **BIO-7** controls invasive weeds	Less than significant with condition of certification
Stormwater runoff: degradation of adjacent habitat	• **BIO-7** minimizes runoff • **SOIL&WATER-1** requires preparation of a SWPPP to control runoff	Less than significant with conditions of certification
Groundwater contamination: degradation of adjacent habitat	• **SOIL&WATER-1** prevents contamination;	Less than significant with condition of certification
OPERATION IMPACTS		
Noise: disturbance resulting in mortality or decreased productivity of special-status birds and rehabilitating wildlife	• **NOISE-4** requires noise reduction	**At marshes:** less than significant **At Wildlife Care Center:** Uncertain pending applicant information
Lighting: disturbance resulting in altered behavior or increased predation	• **VIS-3** minimizes offsite lighting	Less than significant
Avian collision and electrocution: injury or mortality	• **BIO-7** minimizes risk by complying with APLIC design standards	Less than significant with condition of certification

Impact	Condition of Certification	Significance Determination
Stormwater runoff: degradation of adjacent habitat	• **BIO-7** minimizes runoff • **SOIL&WATER-4** requires compliance with NPDES permit requirements for discharge	Less than significant with condition of certification
Nitrogen deposition: degradation of habitat by enhancing invasive weeds	None	Uncertain pending applicant information

OUTSTANDING INFORMATION AND PENDING ANALYSIS

Staff requests the following information from the applicant to complete its analysis:

- 25-hour continuous ambient noise survey at the Wildlife Care Center and results provided as average Leq;
- updated construction noise modeling that incorporates noise-reduction measures to demonstrate that estimated construction and demolition noise would not exceed ambient levels or 60 dBA in areas where ambient levels are below 60 dBA at the Magnolia Marsh, Upper Magnolia Marsh, Brookhurst Marsh, Newland Marsh, and the Wildlife Care Center;
- noise modeling that assumes implementation of Condition of Certification **NOISE-4** as well as any applicant-proposed noise reduction measures and estimated operational noise level at the Wildlife Care Center provided as average Leq; and
- updated responses to Data Requests 23-26 using the new meteorological dataset for the dispersion modeling as recommended by South Coast Air Quality Management District to quantify project specific and cumulative nitrogen deposition.

OVERALL CONCLUSION

At this time, staff is able to conclude that with implementation of proposed conditions of certification, compliance with most LORS would be achieved and most direct, indirect, and cumulative impacts would be avoided, minimized, or mitigated to less than significant levels. However, without further information/analysis/coordination staff is unable to determine whether nitrogen deposition impacts to critical habitat, operational noise impacts at the Wildlife Care Center, and construction noise impacts to special-status birds and rehabilitating wildlife can be mitigated to less than significant levels and compliance with the federal and state endangered species acts, Migratory Bird Treaty Act, and California Fish and Game Code sections pertaining to protection of Fully Protected species and nesting birds can be achieved.

PROPOSED CONDITIONS OF CERTIFICATION

Staff proposes the following Biological Resources conditions of certification:

DESIGNATED BIOLOGIST SELECTION

BIO-1 The project owner shall assign at least one Designated Biologist to the project. The project owner shall submit the resume of the proposed Designated Biologist, with at least three references and contact information, to the Energy Commission Compliance Project Manager (CPM) for approval in consultation with CDFW and USFWS.

The Designated Biologist must meet the following minimum qualifications:

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

In lieu of the above requirements, the resume shall demonstrate to the satisfaction of the CPM, in consultation with CDFW and USFWS, that the proposed Designated Biologist or alternate has the appropriate training and background to effectively implement the conditions of certification.

Verification: The project owner shall submit the specified information at least 75 days prior to the start of site mobilization or construction-related ground disturbance activities. No pre-construction site mobilization or construction related activities shall commence until an approved Designated Biologist is available to be on site.

If a Designated Biologist is replaced, 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. In an emergency, the project owner shall immediately notify the CPM to discuss the qualifications and approval of a short-term replacement while a permanent Designated Biologist is proposed to the CPM for consideration.

DESIGNATED BIOLOGIST DUTIES

BIO-2 The project owner shall ensure that the Designated Biologist performs the following during any site (or related facilities) mobilization, ground disturbance, grading, construction, operation, closure, and restoration activities. The Designated Biologist may be assisted by the approved Biological Monitor(s) but remains the contact for the project owner and CPM. The Designated Biologist Duties shall include the following:

1. Advise the project owner's Construction and Operation Managers on the implementation of the biological resources conditions of certification;
2. Consult on the preparation of the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) to be submitted by the project owner;
3. Be available to supervise, conduct and coordinate 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;

4. Clearly mark sensitive biological resource areas and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions;
5. Inspect active construction areas where animals may have become trapped prior to construction commencing each day. At the end of the day, inspect for the installation of structures that prevent entrapment or allow escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (e.g., parking lots) for animals in harm's way;
6. Notify the project owner and the CPM of any non-compliance with any biological resources condition of certification;
7. Respond directly to inquiries of the CPM regarding biological resource issues;
8. Maintain written records of the tasks specified above and those included in the BRMIMP. Summaries of these records shall be submitted in the monthly compliance report and the annual compliance report;
9. Train the Biological Monitors as appropriate, and ensure their familiarity with the BRMIMP, Worker Environmental Awareness Program (WEAP) training, and all permits; and
10. Maintain the ability to be in regular, direct communication with representatives of CDFW, USFWS, and CPM, including notifying these agencies of dead or injured listed species and reporting special status species observations to the California Natural Diversity Database.

Verification: The Designated Biologist shall submit in the monthly compliance report to the CPM copies of all written reports and summaries that document construction activities that have the potential to affect biological resources. If actions may affect biological resources during operation the Biological Monitor(s), under the supervision of the Designated Biologist, shall be available for monitoring and reporting. During project operation, the Designated Biologist(s) shall submit record summaries in the annual compliance report unless their duties cease, as approved by the CPM.

BIOLOGICAL MONITOR SELECTION

BIO-3 The project owner's CPM-approved Designated Biologist shall submit the resume, at least three references, and contact information of the proposed Biological Monitors to the CPM for approval. The resume shall demonstrate, to the satisfaction of the CPM, the appropriate education and experience to accomplish the assigned biological resource tasks.

Verification: The project owner shall submit the specified information to the CPM for approval at least 30 days prior to the start of any project-related site disturbance activities. The Designated Biologist shall submit a written statement to CPM confirming that individual Biological Monitor(s) have been trained including the date when training was completed. If additional biological monitors are needed during construction, the specified information shall be submitted to the CPM for approval at least 10 days prior to their first day of monitoring activities.

DESIGNATED BIOLOGIST AND BIOLOGICAL MONITOR AUTHORITY

BIO-4 The project owner's construction/operation manager shall act on the advice of the Designated Biologist and Biological Monitor(s) to ensure conformance with the biological resources conditions of certification.

If required by the Designated Biologist and Biological Monitor(s) 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 an unauthorized 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 and advise the CPM of any corrective actions that have been taken or would be instituted as a result of the work stoppage.

If the Designated Biologist is unavailable for direct consultation, the Biological Monitor shall act on behalf of the Designated Biologist.

Verification: The project owner shall ensure that the Designated Biologist or Biological Monitor notifies the CPM immediately (and no later than the morning following 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 would be made by the CPM within five working days after receipt of notice that corrective action is completed, or the project owner would be notified by the CPM that coordination with other agencies would require additional time before a determination can be made.

WORKER ENVIRONMENTAL AWARENESS PROGRAM (WEAP)

BIO-5 The project owner shall develop and implement HBEP-specific Worker Environmental Awareness Program (WEAP) and shall secure approval for the WEAP from the CPM in consultation with USFWS and CDFW. The WEAP shall be administered to all onsite personnel including surveyors, construction engineers, employees, contractors, contractor’s employees, supervisors, inspectors, subcontractors, and delivery personnel. The WEAP shall be implemented during site mobilization, ground disturbance, grading, construction, operation, and closure. The WEAP shall:

1. Be developed by or in consultation with the Designated Biologist and consist of an on-site or training center presentation in which supporting electronic media and written material, including wallet-sized cards with summary information on special status species and sensitive biological resources, is made available to all participants;

2. Discuss the locations and types of sensitive biological resources on the project site and adjacent areas, explain the reasons for protecting these resources, and the function of flagging in designating sensitive resources and authorized work areas;
3. Discuss federal and state laws afforded to protect the sensitive species and explain penalties for violation of applicable laws, ordinances, regulations, and standards (e.g., federal, and state endangered species acts);
4. Place special emphasis on the light-footed clapper rail, western snowy plover, California least tern and Belding's savannah sparrow, including information on physical characteristics, distribution, behavior, ecology, sensitivity to human activities, legal protection and status, penalties for violations, reporting requirements, and protection measures;
5. Include a discussion of fire prevention measures to be implemented by workers during project activities; request workers to dispose of cigarettes and cigars appropriately and not leave them on the ground or buried;
6. Present the meaning of various temporary and permanent habitat protection measures;
7. Identify whom to contact if there are further comments and questions about the material discussed in the program; and
8. Include a training acknowledgment form to be signed by each worker indicating that they received the WEAP training and shall abide by the guidelines.

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

Verification: At least 45 days prior to the start of any project-related site disturbance activities, the project owner shall provide to the CPM a copy of the draft WEAP and all supporting written materials and electronic media prepared or reviewed by the Designated Biologist and a resume of the person(s) administering the program. The CPM shall approve the WEAP materials prior to their use.

The project owner shall provide in the monthly compliance report the number of persons who have completed the training in the prior month and a running total of all persons who have completed the training to date. At least 10 days prior to site and related facilities mobilization, the project owner shall submit two copies of the CPM-approved final WEAP.

Training acknowledgement forms signed during construction shall be kept on file by the project owner for at least six months after the start of commercial operation.

Throughout the life of the project, the worker education program shall be repeated annually for permanent employees, and shall be routinely administered within one week of arrival to any new construction personnel, foremen, contractors, subcontractors, and other personnel potentially working within the project area. Upon completion of the orientation, employees shall sign a form stating that they attend the program and understand all protection measures. These forms shall be maintained by the project owner and shall be made available to the CMP upon request. Workers shall receive and be required to visibly display a hardhat sticker or certificate indicating that they have completed the required training.

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

BIOLOGICAL RESOURCES MITIGATION IMPLEMENTATION AND MONITORING PLAN (BRMIMP)

BIO-6 The project owner shall develop a BRMIMP and submit two copies of the proposed BRMIMP to the CPM (for review and approval) and to CDFW and USFWS (for review and comment), if applicable, and shall implement the measures identified in the approved BRMIMP. The BRMIMP shall be prepared in consultation with the Designated Biologist and shall and shall include the following:

1. all biological resource mitigation, monitoring, and compliance measures proposed and agreed to by the project owner;
2. all biological resource conditions of certification identified in the Commission Decision as necessary to avoid or mitigate impacts;
3. All biological resource mitigation, monitoring, and compliance measures required in other state agency terms and conditions, such as those provided in the National Pollution Discharge Elimination System (NPDES) Construction Activities Stormwater General Permit;
4. all sensitive biological resources to be impacted, avoided, or mitigated by project construction, operation, and closure;
5. all required mitigation measures for each sensitive biological resource;
6. a detailed description of measures that shall be taken to avoid or mitigate disturbances from construction and demolition activities;
7. all locations on a map, at an approved scale, of sensitive biological resource areas subject to disturbance and areas requiring temporary protection and avoidance during construction;
8. Aerial photographs, at an approved scale, of all areas to be disturbed during project construction activities; include one set prior to any site or related facilities mobilization disturbance and one set subsequent to completion of project construction.
9. Duration for each type of monitoring and a description of monitoring methodologies and frequency;
10. Performance standards to be used to help decide if/when proposed mitigation and conditions are or are not successful;
11. All performance standards and remedial measures to be implemented if performance standards are not met;

12. A discussion of biological resources-related facility closure measures including a description of funding mechanism(s);
13. A process for proposing plan modifications to the CPM and appropriate agencies for review and approval; and
14. A requirement to submit any sightings of any special-status species that are observed on or in proximity to the project site, or during project surveys, to the California Natural Diversity Database (CNDDB) per CDFW requirements.

Verification: The project owner shall provide the specified document at least 45 days prior to start of any project-related ground disturbing activities.

The CPM shall determine the BRMIMP's acceptability within 30 days of receipt. If there are any permits that have not yet been received when the BRMIMP is first submitted, these permits shall be submitted to the CPM, the CDFG, and USFWS within 5 days of their receipt, and the BRMIMP shall be revised or supplemented to reflect the permit condition within 10 days of their receipt by the project owner. Ten days prior to site (and related facilities) mobilization, the revised BRMIMP shall be resubmitted to the CPM.

The project owner shall notify the CPM no less than 5 working days before implementing any modifications to the approved BRMIMP to obtain CPM approval. Any changes to the approved BRMIMP must also be approved by the CPM in consultation with CDFG, the USFWS, and appropriate agencies to ensure no conflicts exist.

Implementation of BRMIMP measures shall be reported in the monthly compliance reports by the designated biologist (i.e., survey results, construction activities that were monitored, species observed). Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction closure report identifying which items of the BRMIMP have been completed; a summary of all modifications to mitigation measures made during the project's site mobilization, ground disturbance, grading, and construction phases; and which mitigation and monitoring items are still outstanding.

GENERAL IMPACT AVOIDANCE AND MINIMIZATION MEASURES

BIO-7 The project owner shall implement the following measures during site mobilization, construction, operation, and closure to manage their project site and related facilities in a manner to avoid or minimize impacts to biological resources:

1. The boundaries of all areas to be temporarily or permanently disturbed (including staging areas, access roads, and sites for temporary placement of spoils) shall be delineated with stakes and flagging prior to construction activities in consultation with the Designated Biologist. Spoils shall be stockpiled in disturbed areas, which do not provide habitat for special-status species. Parking areas, staging and disposal site locations shall similarly be located in areas without native vegetation or special-status

species habitat. All disturbances, vehicles, and equipment shall be confined to the flagged areas.

2. At the end of each work day, the Designated Biologist shall ensure that all potential wildlife pitfalls (trenches, bores, and other excavations) outside the permanently fenced area have been backfilled. If backfilling is not feasible, all trenches, bores, and other excavations shall be sloped at a 3:1 ratio at the ends to provide wildlife escape ramps, or covered completely to prevent wildlife access. Should wildlife become trapped, the Designated Biologist or Biological Monitor shall remove and relocate the individual to a safe location. Any wildlife encountered during the course of construction shall be allowed to leave the construction area unharmed.
3. Transmission lines and all electrical components shall be designed, installed, and maintained in accordance with the Avian Power Line Interaction Committee's (APLIC's) Suggested P*ractices for Avian Protection on Power Lines* (APLIC 2006) and *Reducing Avian Collisions with Power Lines* (APLIC 2012) to reduce the likelihood of large bird electrocutions and collisions.
4. Spoils shall not be stockpiled adjacent to the southeastern fence line to minimize potential for spoils to enter into adjacent wetlands.
5. Soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants.
6. Facility lighting shall be designed, installed, and maintained to prevent side casting of light towards the project boundaries. Lighting shall be shielded, directional, and at the lowest intensity required for safety. Lighting shall be directed away from biologically sensitive areas (e.g., Magnolia Marsh). FAA visibility lighting shall employ only strobed, strobe-like or blinking incandescent lights, preferably with all lights illuminating simultaneously. Minimum intensity, maximum "off-phased" duel strobes are preferred, and no steady burning lights (e.g., L-810s) shall be used.
7. Water applied to dirt roads and construction areas (trenches or spoil piles) for dust abatement shall use the minimal amount needed to meet safety and air quality standards in an effort to prevent the formation of puddles, which could attract California least tern predators to construction sites. During construction, a Biological Monitor shall patrol these areas to ensure water does not puddle and attract crows and other wildlife to the site, and shall take appropriate action to reduce water application rates where necessary.
8. Report all inadvertent deaths of special-status species to the appropriate project representative, including road kill. Species name, physical characteristics of the animal (sex, age class, length, weight), and other pertinent information shall be noted and reported in the monthly compliance reports. For special-status species, the Biological Monitor shall contact CDFW and USFWS within 1 working day of receipt of the carcass for guidance on disposal or storage of the carcass. Injured animals shall be reported to CDFW and/or USFWS and the CPM, and the

project owner shall follow instructions that are provided by CDFW or USFWS. During construction, injured or dead animals detected by personnel in the project area shall be reported immediately to a Biological Monitor or Designated Biologist, who shall remove the carcass or injured animal promptly. During operations, the Project Environmental Compliance Monitor shall be notified.

9. All vehicles and equipment shall be maintained in proper working condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The Designated Biologist shall be informed of any hazardous spills immediately as directed in the project Hazardous Materials Plan. Hazardous spills shall be immediately cleaned up and the contaminated soil would be properly disposed of at a licensed facility. Servicing of construction equipment shall take place only at a designated area. Service/maintenance vehicles shall carry a bucket and pads to absorb leaks or spills.

10. During construction all trash and food-related waste shall be placed in self-closing containers and removed weekly or more frequently from the site. Workers shall not feed wildlife, or bring pets to the project site.

11. Except for law enforcement personnel, no workers or visitors to the site shall bring firearms or weapons.

12. Standard best management practices (BMPs) from the project Stormwater Pollution Prevention Plan shall be implemented during all phases of the project (construction, demolition, operation, and decommissioning) where stormwater run-off from the site could to enter adjacent marshes or channels. Sediment and other flow-restricting materials shall be moved to a location where they shall not be washed back into the jurisdictional waters. All disturbed soils within the project site shall be stabilized to reduce erosion potential, both during and following construction.

13. The project owner shall implement the following measures during construction and operation to prevent the spread and propagation of nonnative, invasive weeds:

    a. Limit the size of any vegetation and/or ground disturbance to the absolute minimum and limit ingress and egress to defined routes;

    b. Use only weed-free straw, hay bales, and seed for erosion control and sediment barrier installations. Invasive non-native species shall not be used in landscaping plans and erosion control. Monitor and rapidly implement control measures to ensure early detection and eradication of weed invasions.

14. During construction and operation, the project owner shall conduct pesticide management in accordance with standard BMPs. The BMPs shall include non-point source pollution control measures. The project owner shall use a licensed herbicide applicator and obtain recommendations for herbicide use from a licensed Pest Control Advisor. Herbicide applications must follow EPA label instructions. Minimize use of rodenticides and herbicides in the project area and prohibit the use of

chemicals and pesticides known to cause harm to non-target plants and wildlife. The project owner shall only use pesticides for which a "no effect" determination has been issued by the EPA's Endangered Species Protection Program for any species likely to occur within the project area or adjacent wetlands. If rodent control must be conducted, zinc phosphide or an equivalent product shall be used.

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP and implemented. Implementation of the measures would be reported in the monthly compliance reports by the Designated Biologist. Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction termination report identifying how measures have been completed.

PRE-CONSTRUCTION NEST SURVEYS AND IMPACT AVOIDANCE AND MINIMIZATION MEASURES FOR BREEDING BIRDS

[Note: t*his Condition is likely to be revised based on ongoing coordination with USFWS and CDFW if the applicant cannot reduce construction noise levels in Magnolia Marsh.*]

BIO-8 Pre-construction nest surveys shall be conducted if construction activities will occur from February 1 through August 31. The Designated Biologist or Biological Monitor shall perform surveys in accordance with the following guidelines:

1. Surveys shall cover all potential nesting habitat within the project site and areas surrounding the project site that are exposed to construction and demolition noise levels above ambient or 60 dBA in areas where ambient levels are below 60 dBA.
2. At least two pre-construction surveys shall be conducted, separated by a minimum 10-day interval. Pre-construction surveys shall be conducted no more than 30 days prior to initiation of construction activity. One survey needs to be conducted within the 14-day period preceding initiation of construction activity. Additional follow-up surveys may be required if periods of construction inactivity exceed three weeks in any given area, an interval during which birds may establish a nesting territory and initiate egg laying and incubation.
3. If active nests are detected during the survey, a no-disturbance buffer zone (protected area surrounding the nest) shall be established around each nest. The size of each buffer zone shall be determined by the Designated Biologist in consultation with the CPM (in coordination with CDFW and USFWS). Nest locations shall be mapped using GPS technology and submitted, along with a weekly report stating the survey results, to the CPM in the monthly compliance reports.
4. The Biological Monitor shall monitor all nests with buffers at least once per week, to determine whether birds are being disturbed. If signs of disturbance or distress are observed, the Designated Biologist or Biological Monitor shall immediately implement adaptive measures to reduce disturbance. These measures could include, but are not limited to,

increasing buffer size, halting disruptive construction activities in the vicinity of the nest until fledging is confirmed, or placement of visual screens or sound dampening structures between the nest and construction activity.

5. The Designated Biologist shall monitor the nest until he or she determines that nestlings have fledged and dispersed or the nest is no longer active. Activities that might, in the opinion of the Designated Biologist, disturb nesting activities (e.g., excessive noise above ambient levels or 60 dBA in areas where pre-construction noise levels were below 60 dBA, exposure to exhaust), shall be prohibited within the buffer zone until such a determination is made.

Verification: Prior to the start of any pre-construction site mobilization, the project owner shall provide the CPM a letter-report describing the findings of the preconstruction nest surveys, including the time, date, and duration of the survey; identity and qualifications of the surveyor(s); and a list of species observed. If active nests are detected during the survey, the report shall include a map or aerial photo identifying the location of the nest and shall depict the boundaries of the no disturbance buffer zone around the nest, and a monitoring plan shall be submitted to the CPM for review and approval. Additional copies shall be provided to the CDFW and USFWS for review and comment. Approval of the plan is required before construction may commence. All impact avoidance and minimization measures related to nesting birds shall be included in the BRMIMP and implemented. Implementation of the measures shall be reported in the monthly compliance reports by the Designated Biologist.

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CULTURAL RESOURCES

Gabriel Roark, Thomas Gates, and Amber Grady[1]

SUMMARY OF CONCLUSIONS

Staff concludes that the proposed Huntington Beach Energy Project could result in significant, direct impacts on buried archaeological resources, which may qualify as historical or unique archaeological resources under the California Environmental Quality Act (CEQA). The adoption and implementation of Conditions of Certification **CUL-1** through **CUL-8** would ensure that the applicant would be able to respond quickly and effectively in what staff concludes is the potential to affect buried archaeological resources. These conditions of certification would reduce impacts to historical or unique archaeological resources to a less-than-significant level.

As a result of ethnographic research, staff concludes that there are no ethnographic resources that would be impacted by the proposed project. The ethnographic background information provided in this assessment provides an ethnological context for the assessment of project impacts on archaeological and built environment resources.

As a result of the built-environment research, staff concludes that it is unlikely that built-environment historical resources would be impacted by the proposed project. Research by staff revealed that the Edison Plant, which is located on the project site and would be demolished to accommodate the construction of the proposed project, was listed on the local register by the city of Huntington Beach as a significant local landmark as a result of the 1986 Historic Resources Survey Report (1986 Survey). However, in 2008 Galvin Preservation Associates Inc. was contracted by the city to update and expand the city's existing 1986 Survey. The findings of the most recent survey have been documented in a report, *City of Huntington Beach Historic Context & Survey Report*, and submitted to the city for their review (Galvin 2012). The latest version of this report is in its second draft and was prepared in December 2012. This latest survey recommends that the Edison Plant is not eligible for National Register of Historic Places (NRHP), the California Register of Historical Resources (CRHR), or for local listing. Additionally, it is not listed on, nor has been found eligible for, either the National Register of Historic Places or the California Register of Historical Resources in any documentation provided by the applicant or discovered by staff to date. Based on the information available to date, staff does not believe that the Edison Plant is eligible for the NRHP, CRHR, or the local register; therefore, it is not a historical resource per CEQA and no mitigation measures are recommended at this time. However, the city has not formally accepted the Galvin 2012 report, and staff will be informed by the city of Huntington Beach when the survey update is finalized. The results of this consultation will be included in the Final Staff Assessment.

[1] Roark, archaeological resources; Gates, ethnographic resources; Grady, historic built environment resources. Amber Grady is no longer an employee of the Energy Commission. The Analysis and testimony for the Final Staff Assessment will be provided by other Energy Commission Cultural Resources Staff.

INTRODUCTION

This cultural resources assessment identifies the potential impacts of the proposed Huntington Beach Energy Project (HBEP) on cultural resources. Cultural resources are defined under state law as buildings, sites, structures, objects, areas, places, records, manuscripts, and historic districts (14, Cal. Code Regs., §§5064.5[a][3], 4852a; Pub. Resources Code, §§5020.1[h, j], 5024.1[e][2, 4]). Three broad classes of cultural resources are considered in this assessment: prehistoric, ethnographic, and historic.

Prehistoric archaeological resources are those materials relating to prehistoric human occupation and use of an area. These resources may include sites and deposits, structures, artifacts, rock art, trails, and other traces of Native American human behavior. In California, the prehistoric period began over 12,000 years ago and extended through the eighteenth century until 1769, when the first Europeans settled in California.

Ethnographic resources are those materials important to the heritage of a particular ethnic or cultural group, such as Native Americans or African, European, or Asian immigrants. They may include traditional resource collecting areas, ceremonial sites, topographic features, value-imbued landscapes, cemeteries, shrines, or ethnic neighborhoods and structures. Ethnographic resources are variations of natural resources and standard cultural resource types. They are subsistence and ceremonial locales and sites, structures, objects, and rural and urban landscapes assigned cultural significance by traditional users. The decision to call resources "ethnographic" depends on whether associated peoples perceive them as traditionally meaningful to their identity as a group and the survival of their lifeways.[2]

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

For the proposed HBEP, staff provides an overview of the environmental setting and history of the project area, an inventory of the cultural resources identified in the project vicinity, and an analysis of the potential impacts from the proposed project using criteria from the California Environmental Quality Act (CEQA). The primary concern is to ensure that all potential impacts are identified and that conditions are set forth that ensure that impacts are mitigated below the level of significance.

If cultural resources are identified, staff determines whether there may be a project-related impact to them. If the cultural resources cannot be avoided, staff determines whether any of the impacted resources are eligible for the California Register of Historical Resources (CRHR). If impacted resources are eligible for the register, staff

[2] A “lifeway,” as used herein, refers to any unique body of behavioral norms, customs, and traditions that structure the way a particular people carry out their daily lives.

recommends mitigation measures that ensure that impacts to the identified cultural resources are reduced to a less-than-significant level.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Projects licensed by the Energy Commission are reviewed to ensure compliance with all applicable local, state, and federal laws, ordinances, regulations, and standards (LORS). For the present analysis the applicable LORS are primarily state laws. See **Cultural Resources Table 1** for a summary of the LORS applicable to the proposed project.

Cultural Resources Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
State	
Public Resources Code, §§5097.98(b) and (e)	Requires a landowner on whose property Native American human remains are found to limit further development activity in the vicinity until s/he confers with the Native American Heritage Commission (NAHC)-identified Most Likely Descendents (MLDs) to consider treatment options. In the absence of MLDs or of a treatment acceptable to all parties, the landowner is required to reinter the remains elsewhere on the property in a location not subject to further disturbance.
Public Resources Code, §§5097.99 and 5097.991	Section 5097.99 establishes as a felony the acquisition, possession, sale, or dissection with malice or wantonness of Native American remains or funerary artifacts. Section 5097.991 establishes a state policy requiring the repatriation of Native American remains and funerary artifacts.
Health and Safety Code, § 7050.5	This code makes it a misdemeanor to disturb or remove human remains found outside a cemetery. It also requires a project owner to halt construction if human remains are discovered and to contact the county coroner.
Civil Code, §1798.24	Provides for non-disclosure of confidential information that may otherwise lead to harm of the human subject divulging confidential information
Government Code, §6250.10 – California Public Records Act	Provides for non-disclosure of records that relate to archaeological site information and reports maintained by, or in the possession of, the Department of Parks and Recreation, the State Historical Resources Commission, the State Lands Commission, the NAHC, another state agency, or a local agency, including the records that the agency obtains through a consultation process between a California Native American tribe and a state or local agency.
Local	
City of Huntington Beach General Plan	The city of Huntington Beach promotes the preservation and restoration of the sites, structures, and districts that have architectural, historical, or archaeological significance to the city and highlight the city's unique cultural heritage and enhance its visual appeal.
City of Long Beach General Plan	The city of Long Beach seeks to identify project areas, sites, and structures having architectural, historical, cultural, or archaeological significance and to affirm their value as resources contributing to the vitality and diversity of the present environment.

SETTING

Information provided regarding the setting of the proposed project places it in its geographical and geological contexts and specifies the technical description of the project. Additionally, the archaeological, ethnographic, and historical, backgrounds provide the contexts for the evaluation of the historical significance of any identified cultural resources within the project area of analysis (PAA).

REGIONAL SETTING

The proposed HBEP has project elements that would be located in Orange and Los Angeles counties. The proposed project site and construction parking areas would be located in western Orange County, while the proposed offsite construction laydown area would be situated in Los Angeles County. (AES 2012a: Figure 1.1-2.) As discussed in the HBEP Application for Certification (AFC), both areas are located in the Los Angeles Plain or Basin (AES 2012a:5.2-3; Schoenherr 1992:10). The Los Angeles Basin is situated at the northwestern end of the Peninsular Ranges geomorphic province. This geomorphic unit is located west of the San Andreas Fault and comprises as boundary ranges the San Jacinto, Santa Rosa, and Laguna mountains; the Santa Ana Range is a prominent relief feature closer to the coast. The Los Angeles Basin receives the bulk of its runoff and sediment from the Santa Ana Range and Santa Monica Mountains through the San Gabriel, Los Angeles, and Santa Ana rivers. (Schoenherr 1992:10.) The Los Angeles Basin is an alluvial plain that is generally underlain by deep sediments dating to the Holocene Epoch[3]. Near the coast, eolian (wind-blown) sediments and sand dunes sit atop the alluvial sediments. (AES 2012a:5.4-2.)

PROJECT, SITE, AND VICINITY DESCRIPTION

The proposed project site and off-site parking areas are located in the urban, beachside city of Huntington Beach. The project site is surrounded on the north and east by industrial and commercial properties, the southeast by a wetland conservation area, the south by the Pacific Coast Highway and Huntington Beach, and the west by residential and commercial properties. The off-site construction laydown area is situated in the port area of the city of Long Beach, on artificial fill.

The project vicinity lay in a bolsa, or swampland and tidal flats, from at least the nineteenth century through the early part of the twentieth. The post-World War II building boom and recreational opportunities afforded by the ocean resulted in mid-century development of the area, preceded by industrial uses (oil derricks, sewage disposal, airport, and power generation).

Environmental Setting

Identifying the kinds and distribution of resources necessary to sustain human life in an environment, and the changes in that environment, over time is central to understanding whether and how an area was used during prehistory and history. During the time that humans have lived in California, the region in which the proposed project is located has

[3] The Holocene Epoch is a unit of time used in geology and archaeology to designate the period between the current day and 11,700 B.P. (Cohen et al. 2012). The term “B.P.” (Before Present) is an international dating convention that refers to the year 1950 as the present.

undergone several climatic shifts. These shifts have resulted in variable availability of vital resources, and that variability has influenced the scope and scale of human use of the project vicinity. Consequently, it is important to consider the historical character of local climate change, or the paleoclimate, and the effects of the paleoclimate on the physical development of the area and its ecology.

Overview

The proposed project site is situated approximately 14 feet above sea level (asl) on the Orange County coastline in the city of Huntington Beach. The proposed offsite construction parking areas would be located in an effectively identical setting, albeit closer to sea level. Current land uses in the project vicinity include residential and commercial development, industrial, wetland preserves, parklands and open space, landfill, and beaches. (AES 2012a:5.2-2.)

The proposed offsite construction laydown area would be located in the city of Long Beach, Los Angeles County, adjacent to the Alamitos Generating Station. This location rests between 10 and 15 feet asl. Current land uses consist of industrial, commercial, residential, and parkland endeavors. (AES 2012a:5.2-2, 5.2-3.)

The modern climate of the project vicinity is influenced by the adjacent open coastline and its presence in a semi-permanent high-pressure zone. Consequently, the local weather conditions are typically mild, with average daily highs of 63–84 degrees Fahrenheit (° F) and average daily lows of 45–63 ° F. Summers are dry and warm, punctuated by very hot weather, often caused by southeasterly Santa Ana winds. Winters are mild and wet, most precipitation falling between November and April, averaging about 14 inches annually. (AES 2012a:5.1-3; Engstrom 2006:847.)

Paleoclimate and Ecology

The paleoclimate and ecology of the project vicinity is complex, belied by the fact that former climatic and ecological conditions in the area generally conform to the long-standing, three-part paleoclimatic framework for the arid western United States. In this framework, the Holocene began with a moderately cool and moist period known as the Anathermal (ca. 10,000–7500 B.P.). Subsequently, the California climate appears to have warmed and dried during the Altithermal (ca. 7500–4000 B.P.). During the Medithermal (ca. 4000 B.P.–present), moisture and temperature conditions resembled those of today. (Moratto et al. 1978:148.) The wet winter/dry summer climate of southern California is thought to have persisted through much of these three climatic periods and may be about 160,000 years old (Masters and Aiello 2007:40). Locally, however, climate and ecology changed considerably over the last 12,000–10,000 years.

Paleobotanical studies suggest that a warming trend commenced during the terminal Plistocene Epoch and continued into the Early Holocene. The amount of conifer pollen decreased and was accompanied by a simultaneous increase in the quantity of oak, chaparral, and herb pollen around 14,000–10,000 B.P. The rate of increase appears to have been rapid. (West et al. 2007:25.)

The warming trend—called the Altithermal or Holocene Climatic Optimum—continued throughout the Early Holocene, although cooling events are noticeable as well. For instance, between 8000 and 7500 B.P., sea surface temperature (SST) is inferred to have been warmer and wetter than today, but is followed by a cooler period about 7500–6800 B.P. During this latter interval, red abalone (*Haliotis rufescens*) became more abundant than black abalone in the intertidal zone (*H. carcherodii*), illustrating that climate change affects animal as well as plant life—changes which might be represented in the archaeological record. Overall, mean summer temperatures were higher and precipitation lower than present conditions. (Vellanoweth and Grenda 2002:75–77, 80.)

During the Middle Holocene (7000–4000 B.P.), the southern California climate remained predominantly warm and dry. Dated pollen profiles illustrate this trend, with species favoring cooler and wetter settings (pine and fern) giving way to drought- and heat-tolerant plants (oaks, grasses, chenopods, and the sunflower family [Compositae][4]) throughout this interval. Despite the warm and dry conditions of the Middle Holocene, locally sufficient stream flows were available to freshwater marshes, such as Newport Bay. In such instances, indicator species of wetter conditions, such as members of the sunflower family were abundant, despite an overall arid trend. (de Barros et al. 2002:16; Vellanoweth and Grenda 2002:77–78.)

By 5000–4500 B.P., at the end of the Middle Holocene, sea level reached approximately present-day level, changing the character of near-ocean habitats going into the Late Holocene (4000 B.P.–present). Sea level rise increased tidal influence and direct reach into near-shore wetlands, changing water bodies like Newport Bay from freshwater to largely saltwater features. Wetland salinity was moderated during pulses of freshwater inputs, especially during the flood-prone 3800–2800-B.P. interval (de Barros et al. 2002:16.)

SST oscillated between warm and cold temperatures on a millennial timescale during the last 11,000 years. Cooling episodes occurred about every 1,500 years. Over the last 3,000 years, SST followed a tri-phase development:

1. 3000–1500 B.P.: SST was warm and relatively stable. Marine productivity was low.
2. 1500–650 B.P.: SST was very cold and unstable. Precipitation was low. Marked dry periods occurred at 1450–1150 and 970–700 B.P., corresponding with Stine's (1998) Medieval Climatic Anomaly or medieval drought periods. Between 1000 and 650 B.P., marine productivity was very high.
3. 650 B.P.–present: SST became warmer and more stable. The period of highest marine productivity in the Late Holocene occurred about 650–400 B.P., followed by low marine productivity. A severe dry interval occurred about 300–200 B.P., coincident with much of the Little Ice Age. (Kennett and Kennett 2000:383–385; Vellanoweth and Grenda 2002:79–80; West et al. 2007:25–26.)

Pollen evidence from two cores in San Joaquin Marsh, Upper Newport Bay, show 40–70 percent drought- and salt-tolerant plant pollen from 4500 to 500 B.P., suggesting an

[4] Grass and chenopod pollen, however, was relative sparse throughout sample taken (Vellanoweth and Grenda 2002:78).

overall terrestrial drying trend throughout the Late Holocene (Vellanoweth and Grenda 2002:78).

Estimates from modern stream flow data in the Santa Ana River (calibrated against a tree-ring chronology) to stream flow for 430–55 B.P. show that major floods occurred on average every 84 years, though the data follow a chaotic, non-linear pattern (Vellanoweth and Grenda 2002:80–81.)

The nineteenth-century climate on the southern California coast was a little different than today's climate. Northwesterly winds dominated then as today, although southeasterly winds were more frequent and intense, likened to hurricanes. The turn of the twentieth century heralded reduced influence of southeasterly winds and the Little Ice Age ended with five El Niño events in a 20-year period. (Engstrom 2006:850–851.)

Geology and Soils

The geology and soils of the project vicinity are described in three sections of the AFC and a geotechnical study conducted in support of the AFC (AES 2012a:5.4-2–5.4-3, 5.8-2–5.8-4, 5.11-2–5.11-3; Ninyo & Moore 2011:6). These discussions are not reproduced in full here, but are summarized for the reader's convenience, followed by a discussion of geologic and soil characteristics relevant to this PSA's cultural resources analysis.

The proposed project site, on-site construction parking area, and off-site construction parking areas are situated on Quaternary[5] eolian (wind-deposited) sediments, according to the 30°-by-60° Santa Ana geologic map examined by the applicant. The same map indicates that the proposed off-site construction laydown area in Long Beach overlies artificial fill. (AES 2012a: Figure 5.4-1.) The AFC presents evidence that all sediments excavated to build the proposed project are Holocene in age (AES 2012a:5.8-3). Staff's review of radiocarbon-dated stratigraphy immediately north of the proposed project site supports and adds more chronological detail to the AFC's analysis of sediment age (see *Geomorphology* below).

The AFC indicates that the proposed project site, on-site construction parking area, and two of the off-site construction parking areas would be placed on Tidal Flat soils (soil map unit 211). The easternmost off-site construction parking area would be sited on Bolsa silt loam (soil map unit 122), while the westernmost off-site construction parking area would be on a Beaches soil map unit (115). The proposed off-site construction laydown area would be located in an Urban Land-Sorrento-Hanford (soil map unit s1026) soil unit. (AES 2012a: Figure 5.11-1.) These soil series are suggestive of the qualities of past and recent environs in the project vicinity. Briefly, tidal flats are subject—under natural conditions—to regular cycles of inundation and exposure, while beaches combine tidal influence with that of direct wave-action and winds. Bolsa silt loam soils were formed by alluvial deposition, such as the Santa Ana River's meanderings and flooding. Finally, Urban Land-Sorrento-Hanford soil units are

[5] The Quaternary Period encompasses the Pleistocene (2.588 million years ago–11,700 B.P.) and Holocene (11,700 B.P.–present day) epochs (Cohen et al. 2012). Without further description, therefore, Quaternary geologic formations may be taken to date anywhere from 2.588 million years ago to the present day.

prevalent in areas of considerable urban development, often involving the placement of large amounts of artificial fill. (AES 2012a:5.11-2–5.11-3.)

Geomorphology

The discussion of the geomorphology of the proposed project area considers how and when the underlying soils and sediments developed, and provides a baseline physical context to assess whether surface and buried archaeological materials are likely to occur in the proposed project area.

The project vicinity, excluding the off-site construction laydown area, contains most of the major landforms characteristic of the Los Angeles Basin. This basin is an alluvial plain ringed by the San Jacinto, Santa Rosa, and Laguna mountains, drained principally by the San Gabriel, Los Angeles, and Santa Ana rivers. These streams each deposit sediments from the mountains, forming separate alluvial fans as they make their way seaward. Closer to the proposed project site, the dominant landforms are barrier spits, beaches, low hillock dunes (foredunes), estuaries, and salt marsh (Engstrom 2006:852).

The project vicinity is situated on the portion of coastline known as the San Pedro Littoral Cell[6], which consists of a several geomorphic features: low, sandy shoreline; barrier island; barrier spits and inlets; beach backed by low cliffs; a long barrier spit near Newport Bay; mesas standing 24–120 feet above the surrounding landforms; sand beaches and shallow lagoons close to the ocean (de Barros et al. 2002:6; Engstrom 2006:851). A summary of regional geomorphology from the terminal Pleistocene through the Holocene (ca. 20,000 B.P.–present) is presented below:

20,000–12,000 B.P.

During this time, sea level was markedly lower than today, presenting a wider shoreline than is currently seen in southern California. The coast was rocky, backed by 100–150-foot-tall sea cliffs. Stream action cut valleys onto the coastal plain, with sediment discharge lost to the ocean. The shoreline was energetic at this time owing to the action of large waves. Kelp forests developed near the break of the continental shelf. (Masters and Aiello 2007:40.)

14,000–11,000 B.P.

Sea level rise increased wave energy across the continental shelf and flooded the incised valleys that formed over the previous 6,000 years. Estuaries expanded during the melt water pulses of 13,500 and 11,000 B.P., when stream flows increased considerably. Stream sediments, however, were deposited into the head of estuaries and did not reach the shore, which remained rocky. Kelp forests grew in extent and sea level sat approximately 180 feet below the present level. (Masters and Aiello 2007:40.)

10,000–8200 B.P.

This interval witnessed the development of quiet-water estuaries that fostered fish nurseries, shellfish beds, shorebird foraging, and marine mammal visitation. Deposition of sediment onto the shoreline was limited at this time. Hence, the coast remained rocky

[6] Littoral cells are natural compartments along coasts that contain a complete cycle of sedimentation: sources of sediment (e.g., eroding mountains), transport paths (such as streams), and sinks (places where much of the sediment accumulates and is typically retained).

with cobble beaches and supported shallow reefs and large fish communities. At this juncture the ocean had transgressed to a point about 115 feet below modern sea level. (Masters and Aiello 2007:40.)

6000–5000 B.P.

Between 6000 and 5000 B.P., the southern California coast began its transition from a rocky shore coastline to a sandy beach condition, aided by shore platform-cutting wave action. Shoaling estuaries became less productive and were replaced by sand and mudflats. (Masters and Aiello 2007:40.)

4000 B.P.–Present

During the Late Holocene (the last 4,000 years), large estuaries were replaced by shallow wetlands and lagoons, which were periodically closed by the formation of sand spits. During the last 2,000 years, “megadroughts” (see Stine 1998:51) lasting up to 200 years probably closed lagoons to direct ocean influence. “Megafloods” with a return period of 200–400 years reopened lagoons to the ocean. Kelp forests limited to wave-cut platforms off rocky headlands. Shallow rocky reefs were smothered by sand on the inner shelf. Sand beaches accreted within the littoral cells, certainly during summers’ low-wave energy. (Masters and Aiello 2007:40.)

Native Plants and Animals in the Project Vicinity

The AFC describes the current suite of plants and animals of the project vicinity, with an emphasis on special-status species and sensitive ecological communities (AES 2012a: Section 5.2). Marshes in the project vicinity are sometimes described in terms of three distinct zones: low, middle, and high elevation. Staff’s description of local flora and fauna incorporates and draws from Section 5.2 of the AFC, but also expands the discussion to include non-special-status species important in human ecology[7]. Prior to urban development of Huntington Beach, natural habitats in the project vicinity (including the proposed offsite construction laydown area) included open beach, southern coastal salt marsh, southern foredunes, southern dune scrub, open water, salt panne, and mud flats (AES 2012a:5.2-3, 5.2-14). Further removed from the proposed project were the grasslands of the Los Angeles Basin, riparian woodland along streams, and woodlands in the foothills (AES 2012a:5.2-2, 5.2-3).

Local Plant Communities

Southern coastal salt marsh occurs in areas subject to regular tidal flooding, such as sheltered inland bays, estuaries, and lagoons. Lowest marsh elevations situated adjacent to open water and prolonged saltwater tidal inundation are typified by cordgrass (*Spartina folosia*). Middle-elevation portions of coastal salt marshes generally contain pickleweed (*Salicornia virginica*) and are usually subject to cyclical high-tide flooding. The upper marsh zone is only flooded for short periods during very high tides. This upper zone supports pickleweed (*Salicornia virginica*), saltgrass (*Distichlis spicata*), alkali heath (*Frankenia salina*), alkali weed (*Cressa truxilensis*), California seablite

[7] Scientific names for species discussed here are drawn from: AES 2012a:Section 5.2, Johnson and Snook 1967, Lightfoot and Parrish 2009; Moratto 1984:Appendix 1; Ornduff 1974; Schoenherr 1992. Where all scientific names are presented unambiguously in the AFC, they are not reproduced in this PSA section; the reader is instead referred to AES 2012a:Section 5.2.

(*Suaeda californica*), and marsh jaumea (*Jaumea carinosa*). The distribution of coastal salt marsh today is considerably reduced from pre-urbanized conditions along the coast. (AES 2012a:5.2-14; Ornduff 1974:78–20.)

Southern foredunes are similar to active sand dunes save for the following characteristics: they are less subject to wind, have more stable sand, and greater groundwater accessibility, all of which promotes vegetation growth that further stabilizes the dunes. Native plants associated with foredune communities include beach morning glory, silver bur ragweed, and common eucrypta. The distribution of southern foredunes has been reduced in size since the onset of urban development along the coast. (AES 2012a:5.2-14.)

Southern dune scrub is a dense community of scattered scrub, shrubs, subshrubs, and herbaceous plants less than 3 feet tall. Common native plants include beach saltbush, California croton, California ephedra, mock heather, dune lupine, desert thorn, prickly pear (*Opuntia* spp.), lemonade berry (*Rhus integrifolia*), and jojoba. (AES 2012a:5.2-14; Lightfoot and Parrish 2009:267.)

Southern cottonwood willow riparian forest contains broadleaf winter-deciduous trees such as cottonwoods; black, sand bar, Pacific, and arroyo willows; sycamore; mugwort; and coyotebrush. A known, current occurrence of this community is along the Santa Ana River. (AES 2012a:5.2-14.)

Southern coast live oak riparian forests are locally dense evergreen woodlands. The dominant overstory species is coast live oak. Associated species include bay laurel, big leaf maple, mugwort, toyon, wild rose, and poison oak. (AES 2012a:5.2-19.)

Local Fauna

Coastal sand dunes and foredunes provided habitat for numerous animals: San Francisco tree lupine moth (*Grapholita edwardsiana*), Morro blue butterfly (*Icaricia icarioides moroensis*), Pheres blue butterfly (*Aricia icarioides pheres*), deer mouse (*Peromyscus maniculatis*), California vole (*Microtus californicus*), black legless lizard (*Anniella pulchra nigra*), northern harrier (*Circus cyaneus*), gray fox (*Urocyon cinereoargenteus*), and striped skunk (*Mephitis mephitis*) (CCC 1987:19).

Salt marshes provide habitat for numerous animals, notably several species of waterfowl, such as light-footed clapper rail, Belding's savannah sparrow, California black rail (*Laterallus jamaicensis*), western snowy plover, California least tern, California brown pelican, salt marsh skipper, mallard (*Anas platyrhynchos*), and godwit (*Limosa* sp.). Additional waterfowl and shorebirds forage and inhabit salt marshes in spring and fall: brants (*Branta* spp.), pintails (*Anas* spp.), canvasback (*Aythya valisineria*), sandpipers (Scolopacidae Family), curlew (*Numenius americanus*), and willet (*Catoptrophorus semipalmatus*). (AES 2012a:5.2-3, 5.2-4; CCC 1987:23–24.)

Fish, shellfish, and other aquatic animals of salt marshes and mudflats include California killifish (*Fundulus parvipinnis*), bay goby (*Lepidogobius lepidus*), striped bass (*Morone saxatilis*), topsmelt (*Atherinops affinis*), starry flounder (*Platichthys stellatus*), moon snails (Polinices spp.), horn snail or horn shell (*Cerithidea californica*), fiddler crabs (*Uca crenulata*), ghost shrimp (Callianassidae Family), fat innkeeper (*Urechis* *caupo*), pea crabs (*Pinnotheres pisum*), scale worms (*Lepidonotus melanogrammus*), gobies (Gobiidae Family) and various other crabs, shrimp, clams, and worms. Salt marshes are also important to some mammals, such as California salt marsh shrew (*Sorex ornatus salicornicus*), harvest mouse (*Reithrodontomys megalotis catalinae*), and harbor seal (*Phoca vitulina*). (CCC 1987:24.)

Other wetland animals are expectable in the pre-development environs of the project vicinity: San Diego horned lizard, western pond turtle, silvery legless lizard, Swainson's hawk, white-tailed kite, and tri-colored blackbird (AES 2012a:5.2-3, 5.2-4, 5.2-13).

Locally available shellfish species include abalone (*Haliotis* spp.), bean clam (*Donax gouldii*), black turban snail (*Chlorostoma funebralis*), California mussel (*Mytilus californianus*), littleneck clam or rock cockle (*Leukoma staminea*), olive snail (*Callianax biplicata*, formerly *Olivella* spp.), Pismo clam (*Tivela stultorum*), thick scallop (*Argopecten ventricosus*), and Venus clams or hardshell cockles (*Chione* spp.) (Lightfoot and Parrish 2009:271–272).

Pelagic or open-ocean fish in the project vicinity include anchovies (Engraulididae Family), chub mackerel (*Scomber japonicas*), Pacific bonito (*Sarda chiliensis*), leopard shark (*Triakis semifasciata*), Pacific angel shark (*Squatina californica*), Pacific barracuda (*Sphyraena argentea*), Pacific sardine (*Sardinops sagax*), shovelnose guitarfish (*Rhinobatos productus*), soupfin shark (*Galeorhinus galeus*), and yellowtail (*Seriola lalandi*). Near-shore fish in the area comprise cabezon (*Scorpaenichthys marmoratus*), California sheephead (*Semicossyphus pulcher*), surfperches (Embiotocidae Family), rockfishes (*Sebastes* spp.), kelp bass (*Paralabrax clathratus*), señorita (*Oxyjulis californica*), blacksmith (*Chromis punctipinnis*), bat ray (*Myliobatis californica*), and soupfin shark (*G. galeus*). (Lightfoot and Parrish 2009:273.)

Prior to development of the project vicinity, the area supported various mammals. Among marine mammals there were sea lions (Otariidae Family), sea otter (*Enhydra lutris*), and northern elephant seal (*Mirounga angustirostris*). In addition to the terrestrial mammals listed previously in this section, likely inhabitants of the project vicinity included ground squirrels (*Spermophilus* spp.), hares and rabbits (Leporidae Family), mule deer (*Odocoileus hemionus*), and woodrats (*Neotoma* spp.). (Lightfoot and Parrish 2009:275–277.)

Prehistoric Setting

The HBEP AFC summarizes the human prehistory of the project vicinity with an emphasis on regional trends. In the AFC's summary, the prehistoric setting relies on a recent synthesis of regional prehistory (Byrd and Raab 2007) and is essentially discussed in four parts: ancient sites (commonly referred to in the archaeological literature as Paleoindian and Paleo-Coastal traditions), Early Holocene (11,500–7550 B.P.), Middle Holocene (7950–1450 B.P.), and Late Holocene (1450 B.P.–present). (AES 2012a:5.3-3–5.3-5.) Staff finds much of the AFC's prehistoric setting to be correct and will not repeat it at length here. However, staff provides supplementary information in this section in order to analyze the HBEP's potential to affect archaeological resources. Staff provides additional information in the following areas: (1) clarification of the regional chronology and culture history and (2) the character of local archaeological resources.

Regarding chronology, some archaeologists discuss trends in prehistory against either an arbitrary framework or a timescale that is meaningful in other disciplines, such as geology. For example, Byrd and Raab (2007:217) discuss southern coastal archaeology against a geological timeframe: Early Holocene (ca. 11,700–7700 B.P.), Middle Holocene (ca. 7700–3600 B.P.), and Late Holocene (ca. 3600 B.P.–present). The AFC follows suit for defining the archaeology of the Early Holocene, but its discussion of Middle and Late Holocene time follows the chronology of local archaeological cultures or patterns instead and inadvertently masks regional variation among them (see AES 2012a:5.3-3–5.3-5). Human use of the project vicinity changed over time, making knowledge of specific archaeological patterns in the area necessary to estimate the likelihood that archaeological resources are located in the proposed project area.

Archaeologists traditionally view the Early Holocene archaeology of coastal southern California as the product of peoples who focused on extracting resources from the terrestrial environment. These Paleoindians were viewed as originally dwelling in the southern California deserts and using lake and lakeside resources—an economic orientation referred to as the Western Pluvial Lakes Tradition (WPLT)—until Pleistocene-age lakes in the deserts and Great Basin dried at the beginning of the Early Holocene, at which time some WPLT peoples migrated west to the coast and adjusted their food-getting strategies. (Byrd and Raab 2007:217.) The presence of archaeological sites on the Channel Islands[8] at the beginning of the Holocene Epoch, however, suggests that the southern California coast was not simply colonized by WPLT peoples, but by another group instead or possibly by two distinct groups of people. The Early Holocene marine economy (fish and shellfish), described in the AFC (AES 2012a:5.3-4), has long been equated with the San Dieguito Complex because of assumed links with the WPLT and similarities in flaked stone tools (Moratto 1984:Figure 4; Wallace 1955:218). The marine focus, however, clearly represents a distinct lifeway, and early coastal sites—situated on bays and estuaries—are now commonly classified as part of the Paleo-Coastal Tradition (ca. 12,000–8000 B.P.) (Byrd and Raab 2007:218; de Barros et al. 2002:Figure 2-5).

WPLT archaeological sites consist of leaf-shaped, Lake Mojave, and Silver Lake projectile points; stone crescents; formal and expediently made flake tools; atlatl (spear-thrower) hooks; and micro-cores[9]. Tools for plant processing are notably absent. Presumably, these assemblages represent an economy focused on game hunting. (de Barros et al. 2002:29, 31.) Paleo-Coastal Tradition sites exhibit a similar flaked stone tool assemblage, but differ from the WPLT sites in that the former have yielded pitted stones, asphaltum, pointed-bone objects, and shell spoons and ornaments (Moratto

[8] The most reliable earliest dates on Early Holocene archaeological sites in the southern Bight come from San Miguel Island and San Clemente Island (Byrd and Raab 2007:219) and from CA-ORA-64 on the mainland (Erlandson et al. 2007:Table 4.1). The AFC mentions as examples of Early Holocene archaeological sites: the “Los Angeles Man” of Baldwin Hills and human remains and artifacts from La Brea Tar Pits (CA-LAN-159) (AES 2012a:5.3-3, 5.3-4). Moratto (1984:52–53) and Erlandson et al. (2007:54) have discredited the dating of these finds.

[9] Cores are masses of stone from which pieces are detached to make tools.

1984:104, 109). Marine shellfish, fish, and mammals also are dominant at mainland coastal sites (approximately 73 percent of animal remains) compared to pericoastal and other inland sites (25 percent) (Erlandson et al. 2007:61).

Late in the Early Holocene (about 8000 B.P.), the Orange County archaeological record presents a new culture and adaptive pattern known as the Millingstone Horizon, which persisted in some nearby mountain areas until 1500–1000 B.P. (de Barros et al. 2002:31). The Millingstone Horizon is a distinctive and widespread archaeological complex, found west of the Sierra Nevada from the Baja Peninsula north to Clear Lake (Jones 2008:Figure 1). Although commonly seen as a strictly Middle Holocene archaeological horizon, the Millingstone Horizon spanned much of Orange County prehistory, from the end of the Early Holocene to the Late Holocene, as exemplified by the Cogged Stone Site, CA-ORA-83 (de Barros et al. 2002:42–46). Along the Newport Coast, Millingstone Horizon settlement patterns seem to consist of summer residential bases on marine terraces and other seasonal residential bases around Newport Bay and the foothills of the Santa Ana Mountains. From the marine terraces, Millingstone people fished for sheephead and gathered mussels. Other seasons saw a mix of marine and terrestrial resource use. The Millingstone Horizon component of the Cogged Stone Site is unusual in that it displays a ritual or ceremonial focus. (de Barros et al. 2002:32, 46.) Perhaps following the shell bead trade routes described in the AFC (AES 2012a:5.3-4), most obsidian was obtained from the Coso Volcanic Field (Inyo County), occasionally from the more remote Casa Diablo (Mono County) source (de Barros et al. 2002:36–37). Typical Millingstone Horizon artifacts are described in the AFC's treatment of the Middle Holocene (AES 2012a:5.3-4).

A second type of archaeological culture or complex is known from Middle Holocene Orange County. Known as the Intermediate Cultures (ca. 3000–1350 B.P.), site assemblages are typified by mortars and pestles, basket-hopper mortars, fewer handstones and millingstones, the introduction of the bow and arrow and phasing out of larger dart points, circular fish hooks, and the appearance of stone, bone, and shell beads. Shell beads include two time-sensitive olive snail types and beads made from limpets (*Megathura cremulata*). During major draw-downs of Lake Cahuilla (Salton Sea), Intermediate Culture peoples obtained obsidian from the Obsidian Butte source, although the majority was procured from the Coso Volcanic Field. (de Barros et al. 2002:33–34, 36–37.)

Intermediate Culture sites were fewer in the Newport Bay area than Millingstone Horizon sites, but concentrated in residential bases near permanent water sources within about 2 miles of the bay, such as bluffs above permanent springs and near streams and springs. Some Intermediate Culture sites appear to be reoccupations of earlier field camps and minor residential sites. Fish and shellfish were brought to residential bases from the ocean and from the bay. The Newport Coast and San Joaquin Hills appear not to have been occupied at this time, hypothetically due to reduced resources under very dry conditions. (de Barros et al. 2002:35.)

The AFC's description of Late Prehistoric (ca. 1200 B.P.–Spanish contact), termed therein "Late Holocene", accurately describes the major archaeological trends of this period: abandonment of larger projectile points in favor of smaller points suited to the bow and arrow, concentration of populations into larger villages, proliferation of satellite temporary camps and single-task sites, and the development of what became the Gabrielino society known from the historic period. (AES 2012a:5.3-5.)

Ethnographic Setting

Gabrielino Tongva

The Gabrielino people and representative tribes are most directly related to the project vicinity. There are at least four subgroups of the Gabrielino: those of the Los Angeles Basin, those of the northern mountainous area including the inland San Fernando Valley, those of Santa Catalina and San Clemente islands, and those of San Nicolas Island. Some anthropologists question earlier linguistic assertion that the Gabrielino were a Cupan (a language of the Uto-Aztecan stock of the Takic language family) speaking group. Kroeber has suggested more than four linguistic subgroups based upon language dialect differences. (Bean and Smith 1978:538.) The Gabrielino language has recently been identified as a stand-alone Takic language distinct from Cupan (Mithun 1999:539, 543–544).

The name 'Gabrielino' is derived from the Spanish missionaries who established Catholic missions in the Los Angeles basin in the late 1700s. Two missions were established in the soon-to-be-renamed tribe's territory: San Gabriel Arcangel and San Fernando Rey de España, respectively named after Archangel Gabriel and Saint Ferdinand, King of Spain. Hence those indigenous Californians closest to Mission San Gabriel became known of as "Gabrielinos" and those closest to San Fernando Rey de España became known of as "Fernandenos". Prior to the Spanish period it appears as though the Los Angeles Basin Gabrielino referred to themselves as *Kumi vit* and the San Fernando Valley indigenous as *Pasekarum*. The San Fernando Valley used the same names to refer to the same groups of people (Bean and Smith 1978:548). However, a word that is combined with the suffix '*vit*' refers to a specific place or village and therefore would not be suitable in reference to a group of people who occupied at least 50, if not 100 villages.

The word '*Tobikhar*' seems to have been used in self-description by those Gabrielinos in the 1800s that moved to the mission and the name translates as "settlers" and appears to reference the fact that some Gabrielino left their traditional villages, whether willfully or under forced duress, and settled near the missions. The words *Kizh* or *Kij* also appear in the literature but likely refer to people of a specific house and therefore would not be a name suitable for referencing a nation of people; although the word *Kizh* was mistakenly used by a German linguist to refer to the Gabrielino language. However, one Gabrielino group existent today, takes the word 'Kizh' to mean "houses" and refers to all people living in the Gabrielino style willow constructed house. The word '*Tongva*' was provided to the anthropologist C. Hart Merriam in 1902 by one Gabrielino speaker. Loosely translated as "people of the earth"[10], 'Tongva' has gained popularity since the 1990s and is often used in conjunction with the word 'Gabrielino', although preliminary staff research suggests that at least one Gabrielino group rejects the use of the word 'Tongva' as a group identifier.

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[10] McCawley (1996) suggests that the world Tongva originally named either the Gabrielinos living near Tejon or a separate Gabrielino village called *Tonjwe*.

It is not known what the island groups called themselves or what they called their linguistic relatives on the mainland. A narrative provided by Emma Hardacre suggests that the indigenous of the Islands and particularly San Nicholas Island were killed or intermarried by “Kodiaks” brought by American fur traders to harvest the island’s otter population. The remaining Island Gabrielinos were removed in 1835 with the exception of one woman who returned to the island in search of a lost infant. The woman did not find the lost infant but continued to live in isolation on the island. She was later discovered in 1853 and was removed to the mainland where the remaining Gabrielino speakers could not understand her dialect. (Hardacre 1971:272–284) Kroeber corroborates the “Lone Woman of San Nicholas” story (Kroeber 1976:633–635).

Today, the names Gabrielino, Tongva, or Gabrielino Tongva seems to be the most preferred reference of all sub-groups. The name Gabrielino Tongva will be used for the purposes of this report except when referring to specific tribal entities that have various self-selected names.

Traditional Territory of the Gabrielino Tongva

The Gabrielino Tongva is considered to being prehistorically the group with perhaps the greatest wealth and population, and controlled one of the richest territories in all of indigenous Southern California. Their territory consists of ocean islands and waters, coast line, riverine basins, and mountains that provided a diversity of resources. (Bean and Smith 1978:538.)

The territorial boundaries, while imprecise, are defined here in a counterclockwise direction and starting in the southwestern area of the territory at the mouth of Aliso Creek.[11] The boundary follows the Aliso Creek up into the Santa Ana Mountains and crosses the Santa Ana Mountains near Trabuco Peak. Descending the eastern slopes of the Santa Ana Mountains the boundary runs towards the Santa Ana River and follows the river course up to where the San Andreas Rift and the Santa Ana River intersect. The boundary follows the rift in a northwest direction. The territory includes most if not all of the San Gabriel Mountains. The boundary curves back towards the ocean, following generally the area defined by Soledad Canyon. The territory includes all of the San Fernando Valley, includes the eastern slopes of the Simi Hills and then crosses the Santa Monica Mountains where the boundary line comes down to the coastline at approximately where the present town of Malibu is located. The territory includes the three ocean islands of San Nicolas, San Clemente and Santa Catalina, and the ocean waters surrounding the islands and between the islands and the mainland. The territory includes the Verdugo Mountains of which the central and highest peak was named Tongva Peak in 2006 (Chambers 2001:1-2; Wikipedia 2013).

The HBEP is located in the southwestern portion of the Gabrielino’s mainland territory near and slightly north of where the Santa Ana River empties into the Pacific Ocean. However, the coastal geology in this area is such that both the coastline and the mouth of the river have meandered over an extensive stretch of coastline. This has created an area that, prior to urban infill, was salt marsh and estuary. Kroeber provides a map of

[11] C. Hart Merriam suggests that the boundary is rather to the north along the Santa Ana River. (Merriam 1968).

ethnographic village locations of Southwestern California that indicates that two villages were located near the Lower Santa Ana River. To the south of Newport Bay is the ethnographic village of *Mayo*, and to the north of Newport Bay is the ethnographic village site of *Lucup.* (Kroeber 1976:Plate 57.) A “Tongva Village” map, featured on two Gabrielino Tongva tribal websites indicates that the two villages mentioned above were named *Lopuukngа* and *Moyonga* (Tongva Tribe n.d.a). In addition, the tribal village map provides general locations of two village locations along the coastline in the vicinity of the HBEP. One village is perhaps located near where the breached Santa Ana River currently enters the Pacific Ocean and has the name *Kenyaanga*. The second is located closer to the project area, but because of the scale of the map the village name and precise location cannot be deciphered. It is likely that the primary ethnographic villages were located on the higher mesa areas above the bay and related estuary and marsh lands, and that “villages” located along the beaches, were frequented as marine resource procurement camps. However the coastline has varied due to shifting ocean depths and related sand deposits and this coastal area of California is known for containing off-shore buried/submerged archaeological deposits.

Gabrielino Tongva Affiliations and Relations with Other Indigenous Groups

The Gabrielino Tongva maintained solid trade relations with all groups that surrounded them: The Chumash, the Tatviam, Serranno, Cahuilla, Luiseno and Juaneno. Through these intermediaries the Gabrielino were known as far north as the southern Central Valley homelands of the Yokuts and to the east among the Yuman tribes of the Colorado River. Steatite, some of the best found in all of California, was traded from the Gabrielino Tongva source at the Santa Catalina Island, out to the east as far as present day central Arizona. In addition, shellfish of the Gabrielino Tongva coast provided superior source material for shell disc money. Marine mammals were in abundance along the Islands and mainland shores and off-shore rookeries. In long distance exchange Gabrielino Tongva received deer hides, obsidian and white clay pottery. A more local Los Angeles Basin trading network would have facilitated the exchange of the resources that result from the rich and local environment that constituted Gabrielino Tongva and neighboring territories. There is some suggestion that local Gabrielino trading occurred, obviously between the Islands and the coast and also between the coast and the inland villages. There is further suggestion that some animosity existed between coastal and inland Gabrielino Tongva villages.

The Gabrielino were the western end of one of the most extensive indigenous trade networks in the Southwest. The Coco-Maricopa Trail (also referred to as the Halchidoma trail) guided people and goods between the Southern California Coast and Central Arizona (Johnston 1980). The regional indigenous trail network was of keen interest for the missionaries, intent on finding overland routes that allowed for transportation linkages to the established missions of New Mexico (Kessel 2002:253–287).

The literature suggests that the Gabrielino were the center of the Jimson weed/datura/toloache cult and that the neighboring Luiseno, Juaneno and Chumash fashioned their similar ceremonies following the Gabrielino Tongva lead (Kroeber 1976:626–627).

It is suggested that the southern mainland territory of the Gabrielino, between the Santa Ana River and the Aliso Creek, and including the Newport Beach area, was occupied in recent precontact and early mission times (1650–1775) by both Gabrielino Tongva and Juaneno (Earle and O'Neil1994:153–154). The two closely affiliated groups intermarried within this overlapping territorial strip of land. This analysis ensues from a careful reading of mission records where names of married neophytes were entered into mission records and noticing word length of names and name suffixes that reflect the related but different linguistics naming suffixes of the two neighboring peoples (Earle and O'Neil 1994:153–154).

Sources of Ethnographic Data

The earliest ethnographic accounts, other than missionary records, can be attributed to Hugo Reid, a Scotsman, settler, naturalized Mexican citizen, and spouse of a Gabrielino woman, Victoria Reid. Reid documented place names and locations of Gabrielino villages and relied extensively on his wife and her relatives and contacts for his information. Reid's notes and letters have been published by Robert Heizer (Heizer 1968). Englehardt contains some ethnographic information in his writings on the California Missions in general (Englehardt 1908–1915) and specifically the two missions located within Gabrielino Tongva territory (Englehardt 1927a, 1927b). C. Hart Merriam conducted seminal ethnographic research with one Gabrielino woman that produced valuable ethno-linguistic information, although it is not clear where the Merriam notes for the Gabrielino interviews are stored or published. Alfred Kroeber wrote the authoritative Gabrielino section included in the *Handbook of the Indians of California* (Kroeber 1976). John P. Harrington conducted ethnographic and linguistic studies that included ethnographic inquiry into the Chingichngish cult (Harrington 1933) and he produced a Gabrielino cultural element distribution list (Harrington 1942). Bernice Johnston produced a summary Gabrielino ethnohistory (Johnston 1962). Lowell Bean and Charles Smith co-wrote the Gabrielino Section for the encyclopedic Smithsonian Handbook of North American Indians, Volume 8: California (Bean and Smith 1978). More recently William McCawley produced a Gabrielino ethnohistory (McCawley 1996) which was followed by a publication, co-written by Claudia Jurmain that is, in part, an ethnography of contemporary Gabrielino Tongva people (Jurmain and McCawley 2009).

Gabrielino Tongva Economy, Resources and Material Culture

As stated earlier, the Gabrielino Tongva territory consists of diverse landforms and a related diversity of resources. The territory includes ocean islands, the ocean, coastline beaches, estuaries, salt marshes, rivers, riverine basins or piedmonts, foothills and mountains. Gabrielino Tongva were proficient at gathering acorns, sage, yucca, cacti, and a variety of plants and animals, and birds associated with the coastline salt marshes and estuaries. Sea fish such as tuna and dolphins were taken from the ocean and deer were harvested from the piedmont and mountains. Salt was gathered for daily consumption and for trade inland. The coastline that extended south of San Pedro to Newport Bay consisted of a string of secondary subsistence gathering camps. Primary subsistence villages are found immediately adjacent and inland from the coast. (Bean and Smith 1978:539.)

Men and children went without clothing in the temperate climate. Women wore aprons of deerskin or the inner bark of willow or cottonwood trees. Capes for use during cold or rainy seasons were made of deerskin, rabbit fur or bird skins woven together with milkweed or yucca fiber. Otter skins were also used and also traded inland. Ritual costumes were constructed of bird plumage, shells, and beads. Body paint was used during ceremonial events. (Bean and Smith 1978:540.)

Steatite was traded inland in raw and fashioned form, and was used to manufacture animal effigies, pipes, cooking utensils, arrow straighteners, and palettes (a type of armor plate). Asphaltum was used to assure water tight vessels including baskets and canoes, and was used to attach rare minerals, shells and beds to ceremonial dress. Bedrock and portable mortars predominated. The Gabrielino were uniquely known for specific ownership and transportation of personal mortars. Other utensils of common use were metates, mullers (pestles), mealing brushes, wooden stirrers, shell spoons, and wooden bowls. Deer scapulae were fashioned into saws. Bone, shell, wood and flints were fashioned into needles, awls, fishhooks, scrapers, flakers, wedges, projectile points, cane knives, and flint drills. Shell disc bead money was manufactured and used as local currency and was recognized as legitimate currency as far east as the Colorado River. Business transactions and obligations and payments on debt were tracked by knotting cordage. Ceremonial rattles were fashioned from gourds. Pottery does not show up in the various archaeological excavations of the area until the late mission period. Baskets were woven from rushes, grass, and various bushes. Various basket types included mortar hoppers, flat baskets, carrying and serving baskets, storage baskets and ceremonial baskets for grave offerings. Weapons for war or hunting consisted of war clubs, self- and sinew-backed bows, tipped and untipped cane arrows and throwing clubs and slings. Planked canoes, fashioned from wooden planks that were tied together with cordage and caulked with asphaltum are a technological feat shared with the Chumash to the north and the Luiseno to the south. Marsh and estuary bodies of water were traveled by use of rush rafts. (Bean and Smith 1978:542.)

Houses were domed, circular structures thatched with tule, fern or carrizo reed mats. A large house could hold up to three or four families (50 people), and was perhaps 60 feet in diameter. Sweathouses were small semi-circular, earth covered buildings reserved exclusively for adult male use. Menstrual huts were also constructed and frequented by women. Ceremonial open-aired enclosures were made of willow posts and willow wicker. The interiors were decorated with feathers and painted posts. The ceremonial enclosures were used for the Chingichngish (toloache) cult and, among other ritual functions, housed ceremonial sand paintings featuring depictions of the sun and moon and were utilized for divination events. (Bean and Smith 1978:542.)

Gabrielino Tongva Political Organizations and Religious Practices

Because of the missionary conversion process, coupled with a high rate of disease for which Gabrielino Tongva people were not immune, loss of traditional knowledge and a high rate of deaths left the Gabrielino Tongva cultural traditions very fragmented by the time that anthropologists arrived to document what remained of the traditional culture. Therefore less is known about traditional Gabrielino political organization and religious practice.

The Gabrielino seemed to have adhered to a moiety kinship structure likely of the “Dakota” system with Iroquois cousin terminology, similar to their neighboring Juaneno and Luiseno neighbors. In addition, crosscutting the kinship system, were three social classes. Social classes tend to appear in societies that have evolved in environments that provide an abundance and diversity of resources. Gabrielino Tongva society had an elite class of hereditary chiefs and the very wealthy. There was a middle or common class that were modestly wealthy and that were from fairly reputable lineages. There was a lower class of everyone else: the poor, disreputable, or those of ill fate. Marriage or wealth accumulation were the prime avenues for social movement within the class system (Bean and Smith 1974:543, 545).

Villages comprised non-localized segmentary lineages. One or two lineages may have dominated a particular village for a period of time but dominance was not permanent or guaranteed. Regardless of moiety or class affiliation, political autonomy occurred most effectively at the village or "tribelet" level, with the dominant lineage's leader assuming the village chief position. The leadership was manifest in the possession of the village sacred bundle and the possession of a chief name. Leadership tended to be passed through male descent, unless the other village lineage leads could agree that either there was no one in the controlling lineage that existed, or there was no one of the dominant lineage that was competent to lead. Leadership at times could be passed to daughters. Village chiefs could combine and preside over more than one village and this could be done by alliance agreement or by having multiple wives, each in a different village. Larger villages could segment with some of the lineage forming a hamlet that still held allegiance to the parent village. A large and wealthy village could have multiple radiating hamlets or camps. Over time these smaller villages could rise to dominance and overshadow the parent village. A leader's responsibility was to protect the sacred bundle, collect taxes from the village houses, settle disputes, make decisions of war, negotiate peace treaties, and to generally live an exemplary life. The village leader could be assisted by an announcer, a tax collector/treasurer, general assistants and messenger/runners. However, villages also had shamans who from time to time could trump the authority base of the village leader (Bean and Smith 1974:544).

Shamans gained their power and knowledge directly from the "Great Spirit" when conversing with the spirits while in Jimson Weed induced states. Shamans could cure or cause calamity and illness, divine, and knew, collected and dispensed various herbal and animal remedies including the making of poisons for weapons. Gabrielino Tongva practiced cremation of their deceased, including the burning of the deceased's personal belongings. Shamans were responsible for conducting the yearly mourning ceremonies for grieving families of the deceased. While village leaders or chiefs protected the sacred bundle, shamans were responsible for the spiritual protection of the sacred bundle (Bean and Smith 1974:544).

Gabrielino religious beliefs and practices are not well understood or documented but it appears that the Gabrielino, and perhaps the Gabrielino of Santa Catalina Island specifically, developed the Toloache cult which involved ritual consumption of Jimson Weed. This cult spread to distant tribal nations throughout Southern California and the southern Central Valley. The Jimson weed cult was most associated with the creator deity Chingichnich, who is attributed with fixing the world for humans. There is a pantheon of deities that surround Chingichnich. Participants, perhaps inducted into the cult during adolescence, gained insight into the nature of the world and the tribal and individual role and place in the universe; and that insight provided success in hunting, warring or other activities of importance to the survival of the village over time (Kroeber 1976:626).

Contemporary Tribal Entities with Ethnographic Affiliations

There are various Gabrielino Tongva and Juaneno tribes, nations and other organizations. Names are very similar and it is difficult at first glance to determine the groups, political platforms and cultural affiliations. Addressing the multiple Gabrielino Tongva identity and related organizations, Wikipedia (2013) summarizes as follows:

> *Since 2006, there have been four organizations claiming to represent the Tongva: The Gabrielino-Tongva Tribe – also known as the "hyphen" group from the hyphen in their name, the Gabrielino/Tongva Tribe of the Los Angeles basin—also known as the "slash" group—The Gabrieleno Band of Mission Indians, and the Gabrieleno/Tongva Tribal Council of San Gabriel. Two of the groups are the result of a hostile split over the question of building an Indian Casino.*

However, the Native American Heritage Commission (NAHC) list provides additional tribal names that represent Gabrielino or Tongva people and culture. Tribal entities are listed below:

- Gabrielino Band of Mission Indians – Kizh (Kitc) Nation

  The Gabrielino Band of Mission Indians – Kizh (Kitc) Nation does not affiliate with the name "Tongva" and instead prefers the name 'Kizh' (Kitz). They suggest that 'Kizh' refers to houses made of willow, tule and brush and refers to all the people that lived in such houses, ostensibly all "Gabrielinos". The seven-person tribal council seeks federal recognition and is an advocate for the protection of cultural resources. The Nation's website provides a map of sites, including village locations; the project vicinity is identified as having two villages one on either side of the Santa Ana River. Lopuuknga is on the north side of the river and Moyonga is on the south side of the current day Newport Bay. Along the coast line and to the north of the Santa Ana River (the map depicts the Santa Ana River flowing into Newport Bay) is village location with the name Kenyaanga (Tongva Tribe n.d.a).

- Gabrielino/Tongva San Gabriel Mission

  No information available.

- Gabrieleno/Tongva San Gabriel Band of Mission Indians

  No information Available

- Gabrielino Tongva Nation

  No information produced by or directly representative of the Tongva Nation discovered online.

- Gabrielino-Tongva Tribe

  The Gabrielino-Tongva Tribe, historically part of the San Gabriel Band of Mission Indians, has offices in Los Angeles California. The tribe has sought federal recognition status, but has yet to receive recognition. They are guided by a council of four that collectively show expertise in business. The tribe has been involved in efforts to establish a casino resort in the Los Angeles area, and is assisted in this endeavor by outside legal counsel. (Gabrielino-Tongva Tribe 2013). The tribe has requested that project ground-disturbing activities are monitored by tribal people.

- Gabrielino/Tongva Indians of the California Tribal Council

  Also referred to as the Gabrielino/Tongva Tribe of the Los Angeles Basin, their website covers the process and documentation of the tribe's elections (Tongva Tribe n.d.b).

- Tongva Ancestral Territorial Tribal Nation

  No information on this tribe was discovered online.

- Ti'at Society/Intertribal Council of Pimu

  No information concerning this tribe was discovered online.

- Juaneno Band of Mission Indians Acjachemen Nation

  The tribe operates through a tribal council. The Nation has gained state legislative recognition but was recently (March 2011) denied federal recognition status. The Nation's website indicates that it has a membership of 1,941 people (Juaneño Band n.d.). A tribal representative advocated for tribal monitoring on the HBEP site.

- United Coalition to Protect Panhe

  The coalition was formed to respond to a project to build a toll road that the coalition felt would impact a Juaneno village named Panhe. The toll road project was proposed for an area approximately 40 miles south of HBEP.

Historic Setting

Spanish Period (1769–1821)

By the middle of the sixteenth century, Spain had emerged as the premier naval and military power in Western Europe with colonies in North and South America and a trading network throughout the Pacific. On September 28, 1542 Juan Rodriguez Cabrillo arrives in San Diego aboard the San Salvador and claims the land in the name of Spain (San Diego History Center 2012). In November 1602 Sebastian Vizcaino arrives in San Diego, he is surveying the coastline and gets as far as Oregon (San Diego History Center 2012). In the late 1770s, Antonio Maria de Bucareli, the Viceroy of New Spain, "legitimized Spain's claim to Alta California by making it the new *Provincia de California* with a provisional capitol at the Presidio at Monterey" (Steiner 1999:6). Bucareli's plan was to use the missions to colonize the new province. While the Spanish explored the coast of present-day California in the mid-sixteenth century it was not until the incursion of Russian and British explorers into what are now Alaska, British Colombia, Washington, and Oregon in the 1750s that serious attempts were made by the Spanish to colonize Alta California (Steiner 1999:4–6). It was Bucareli who ordered Juan Bautista de Anza to lead an exploration to establish an overland route from Sonora (present day Arizona) as well as from Mexico in order to facilitate the colonization of California, but providing a stable supply route. Over 150 years would pass before the Spanish would attempt permanent settlement. The first overland expedition through Orange County was led by Don Gaspar de Portola in 1769 (OCHS 2013).

The Spanish colonization of California was achieved through a program of military-civilian-religious conquests. Soldiers secured areas for settlement by suppressing Indian and foreign resistance and establishing fortified structures called presidios. Civilians established pueblos (e.g., towns) and Spanish priests led the religious conquest effort by establishing missions and converting the Indians. The first of the 21 missions to be built in California by the Spanish was San Diego Alcala. Local Native American tribes were the dominant source of labor at the missions. In 1771 Father Junipero Serra founded Mission San Gabriel Arcangel, in present-day San Gabriel (Los Angeles County) (OCHS 2013). Mission San Juan Capistrano, in present-day Oceanside (San Diego County) was founded on November 1, 1776 (OCHS 2013). Huntington Beach is located approximately 90 miles northwest of Mission San Diego Alcala between Mission San Gabriel Arcangel and Mission San Juan Capistrano. Missions San Gabriel Arcangel and San Juan Capistrano made up much of what is now Orange County.

Large tracts of land were granted by the Spanish government to encourage settlement in Alta California. In 1784 Jose Manuel Nieto received a Spanish land grant of 300,000 acres, Rancho Los Nietos, from the Spanish Governor of California, Pedro Fages (HB 1996). Rancho Nieto included all of the land between the San Gabriel and Santa Ana rivers and from the foothills to the sea (OCA 2013a).

In 1822, Mexico achieved independence from Spain, and California became an outpost of the Mexican Republic.

Mexican Period (1821–1846)

By the 1840s, there was a steady migration of American settlers into California. Unable to stop the incursion, the Mexican government granted citizenship to all who would pledge to follow Mexican law. Many of these foreigners received land grants on which they established grazing and commercial operations. One example of this is the New Helvetia Rancho granted to John Sutter in 1839 in what is now the city of Sacramento.

Rancho Los Nietos was divided by Governor Jose Figueroa in 1834 among Nietos heirs resulting in four separate ranchos: Rancho Las Bolsas, Rancho Las Alamitos, Rancho Los Coyotes, and Rancho San Gertrudes (Baily 1981; HB 1996; OCA 2013a). Rancho Las Bolsas covered 21 square miles and included portions of present day Huntington Beach, Garden Grove, and Westminster (Sherwood 2013).

War broke out between the United States and Mexico in May 1846. The American victory over Mexico was formalized in February 1848 with the signing of the Treaty of Guadalupe Hidalgo, and Mexico ceded all its land holdings above the Gila and Rio Grande rivers to the United States. California was admitted as the thirty-first state in the Union on September 9, 1850.

American Period

In 1848, the discovery of gold at Sutter’s Mill in northern California, near Sacramento, kick started the California Gold Rush. In 1850, California was granted statehood, and its first 27 counties were established. Huntington Beach is located in Orange County, which was established in 1889.

In 1850, Abel Stearns acquired both Las Bolsas and Bolsa Chica Ranchos on which he established a cattle ranching operation (HB 1996). Stearns was the largest land and cattle owner in the state at the time and he would later form Stearns Rancho Company under which name he raised cattle and horses and grew barley (HB 1996, 2013).

Stearns later sold off the portion of his land that would later be known as Shell Beach to Colonel Robert Northam. Colonel Robert Northam grew barley and sold it to the local ranchers. (HB 2013.)

In 1901, Philip A. Stanton and Colonel H.S. Finley organized the West Coast Land Company, purchasing 1500 acres of Rancho Las Bolsas from Northam and subdivided 40 acres along present day Main Street, 20 acres along each side of the street (HB 1996, 2013; Sherwood 2013). The new town was named “Pacific City,” formerly Shell Beach. Some of the first buildings in the new town were moved from nearby Newport and Fairview via the beach at low tide (Baily1981). City improvements included streets and a water system and a post office was established in 1903 (Sherwood 2013). It was soon apparent that without connections to the surrounding communities that this new town would not grow. At this time there were no railroads, bridges or roads connecting the town.

Stanton brought in Henry E. Huntington in order to get the community connected via the “Red Cars” and the development company was reorganized and renamed the Huntington Beach Company (HB 1996). In 1904 the town was renamed Huntington Beach, street trees were planted, and the first pier was built. (Sherwood 2013).

The first electric passenger train, the “Red Cars” of the Pacific Electric Railway, arrived in Huntington Beach on July 4, 1904 (Milkovich 1986). Prior to this only freight lines had run through the city. In 1898 Pacific Electric Railway, named Los Angeles Consolidated Electric Railway at the time, was purchased by Collis Huntington, president of the Southern Pacific Railroad, and his nephew Henry Huntington (USC 2002). At this time the public transportation market in southern California was quite small with only scattered intercity rail lines. In 1902 the Huntingtons took over the Los Angeles-Pasadena interurban line and built a new line to Long Beach (USC 2002). In 1904 it reached Huntington Beach via the Newport-Balboa Line, which ran through Seal Beach (OCA 2013b). Between 1904 and 1910 three branches of the Pacific Electric Railway were built in Orange County (OCHS 2013). Ridership declined, due in large part to the increase in automobile ownership and freeways, starting in the 1950s and on April 8, 1961 operation of the Pacific Electric ceased (USC 2002).

The 3.57-square mile town of Huntington Beach with a population of 915 was incorporated on July 17, 1909 (HB 1996; Sherwood 2013).

The Huntington Beach Company provided several city improvements including electricity, telephone service, sidewalks, curbs and gutters, a pavilion, an indoor plunge, a hotel, and parks. Additionally, a nursery provided free plants to residents. Stanton sold his interest in the West Coast Land Company while Finley stayed on with the newly formed Huntington Beach Company. (Baily 1981.)

The Holly Sugar plant was built in 1911 and by 1914 more than 300 people worked at the plant making it the largest employer at the time (Sherwood 2013).

In 1919, encouraged by the discovery of natural gas by early settlers, Standard Oil leased 500 acres from the Huntington Beach Company and geologists began exploratory oil drilling (Baily 1981; HB 1996). Oil was being produced by August 1920 and in the early 1930s oil was discovered offshore at which time the technique of slant drilling began to be employed (Sherwood 2013). At the height of the oil boom the coastline was lined with derricks and Huntington Beach was California's fourth largest oil field (Baily 1981).

In the 1920s most of the Southern California beaches were segregated and only allowed white people. In December 1924 Hal R. Clark purchased 7.5 acres of beachfront about 1 mile below the Huntington Beach Pier for the purpose of developing a beach club for blacks (OCA 2013c). Clark worked with leaders of Los Angeles' black community to plan and promote the venture (OCA 2013c). Unfortunately over the next 2 years or so, a variety of circumstances and events including financial difficulty, community opposition, and arson, the club was never completed and in January 1927 the mortgage company foreclosed on the property (OCA 2013c).

The Pacific Coast Highway (a.k.a., PCH, Coast Highway, CA Highway 1), a portion of which is located near the project site, stretches from Baja to the Olympic Peninsula. The PCH was federally funded in 1919 and was completed in 1926 (OCHS 2013). It is also an Eligible State Scenic Highway.

Initially after WWII, Huntington Beach was excluded from the housing boom because the surrounding land was in active oil or agricultural production (HB 1996). In 1948, the state purchased 11,000 feet of beach property stretching from the trailer park west of the project site east to the Santa Ana River and established the Huntington Beach State Park (Sherwood 2013).

Agriculture dominated the economy of Orange County until the 1950s. While farms were being replaced with tract housing across Orange County, the effect was less extreme in Huntington Beach than other parts of Southern California (OCHS 2013). The last oil strike occurred in 1953 and as operations ceased the forest of derricks began to disappear from the coastline (HB 2013).

The Edison Company built an electrical generating plant in Huntington Beach that was completed in 1956 (Sherwood 2013). The rapid growth of the city that followed from 1957 to 1970 is attributed to annexations (HB 1996; Sherwood 2013). In the 1970s the city developed Central Park and established the Central Library (Sherwood 2013).

Steam Generation Plants in the United States

As stated in the AFC, the first commercial central electrical generation stations were located in New York and London and began operations in 1882 and steam-powered turbines continue to be the dominant technology used to generate electricity in the United States today.

In 1879, the Brush Plant in San Francisco was the first central generating station on the west coast to produce and distribute electricity on demand to customers. Prior to Thomas Edison's invention of the incandescent electric light bulb in 1879 only the electric arc system was available, which turned out to be unsafe for indoor use. (Myers 1983:11.) Edison is also known for improving the generation and distribution systems for electricity, which truly opened up the consumer market.

Southern California Edison Company

The Southern California Edison Company (SCEC) acknowledges three early predecessors; Holt and Knupp, the Santa Barbara Electric Light Company, and one individual entrepreneur. Holt and Knupp, later known as the Visalia Electric Light and Gas Company, were responsible for lighting the streets of Visalia in 1886 as part of their Visalia Iron and Agricultural Works. (Myers 1983:13.) The Santa Barbara Electric Light Company was founded by General Samuel W. Backus 1886 and on March 15, 1887 the company began providing power to homes, business, and hotel that had subscribed to the service as well as street lighting downtown (Myers 1983:17). The third predecessor of the SCEC began when Charles R. Lloyd leased the power privileges at the Riverside Water Company's irrigation canal; near Highgrove the canal dropped 50 feet at one point and Lloyd planned to use this fall to generate electricity. Eventually Lloyd would incorporate his venture as the San Bernardino Electric Company. Shortly after the steam powered systems in Visalia and Santa Barbara and the hydro powered system in Highgrove went online, several other electric utilities began service and by the 1890s electric service was fairly wide-spread. (Myers 1983:19–22.) Initially, power plants used direct current dynamos, which were limiting because the electricity could only travel a short distance, 2–3 miles, restricting the area that could be served. The introduction of alternating current dynamos extended this distance considerably as did San Antonio Light and Power engineer Almanrian William Decker's concept of the step-up, step-down transformation of electrical currents, which also allowed distribution over long distances (Myers 1983:26). In a matter of months in 1892 and 1893, electric technology and the electric utility industry were revolutionized by two hydroelectric power plants in Southern California; the San Antonio plant proved the commercial feasibility of long-distance distribution and the Mill Creek plant is where the three-phase alternating current technology first appeared (Myers 1983:31). The Mill Creek plant continues to operate today. In 1894, the Los Angeles Edison Electric Company was formed to obtain a license from General Electric, Thomas Edison's company, to use the Edison name and patents in the Los Angeles area. In1897, it merged with the West Side Lighting Company under the name the Edison Electric Company of Los Angeles (Myers 1983:37). The company grew as technology and the expanding customer base allowed. In 1901, John Barnes Miller became president; he was responsible for negotiating a number of mergers with the goal of creating a regional system (Myers 1983:40).

Orange County Flood Control District

The Orange County Flood Control District (OCFCD) was established in May 1927 under authorization of the Orange County Flood Control Act. Their purpose was to control flood and storm waters of streams flowing through and into the district (e.g., the Santa Ana River or San Juan Creek), mitigate the effects of tides and waves, and to protect the harbors, waterways, public highways and property in the district (OCFCD 2013a). The Santa Ana River is approximately 1.4 miles away and the Huntington Beach

Channel is adjacent to the project site. According to historic aerials and topographic maps the Huntington Beach Channel was constructed sometime between 1965 and 1972.

The Santa Ana River Mainstem Project (SARP) was initiated in 1964 with the intent of upgrading the system from 10-year flood event protection to 100-year flood event protection (OCFCD 2013b). The portion that is adjacent to the project site was begun in 2002 and completed in 2004. Formerly, it existed as a trapezoidal-earthen channel; it was replaced by an 80 feet wide, earthen bottom, vertical wall channel with 13–14 feet high steel sheet piles lining the sides. (OCFCD 2013c.)

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

Regulatory Context

California Environmental Quality Act (CEQA)

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

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

Under CEQA, a resource is generally considered to be historically significant if it meets the criteria for listing in the CRHR. These criteria are essentially the same as the eligibility criteria for the NRHP. In addition to being at least 50 years old,[12] a resource must meet at least one (and may meet more than one) of the following four criteria (Pub. Resources Code, §5024.1):

[12] The Office of Historic Preservation [OHP] (1995:2) endorses recording and evaluating resources over 45 years of age to accommodate a five-year lag in the planning process.

- Criterion 1, is associated with events that have made a significant contribution to the broad patterns of our history;
- Criterion 2, is associated with the lives of persons significant in our past;
- Criterion 3, embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values; or
- Criterion 4, has yielded, or may be likely to yield, information important to history or prehistory.

In addition, historical resources must also possess integrity of location, design, setting, materials, workmanship, feeling, and association (14 Calif. Code Regs., §4852[c]).

In addition to historical resources, archaeological artifacts, objects, or sites can meet CEQA's definition of a unique archaeological resource, even if it does not qualify as a historical resource (14 Calif. Code Regs., §15064.5[c][3]). Archaeological artifacts, objects, or sites are considered unique archaeological resources if "it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person." (Pub. Resources Code, §21083.2[g].)

To determine whether a proposed project may have a significant effect on the [cultural resources] environment, staff analyzes the proposed project's potential to cause a substantial adverse change in the significance of historical or unique archaeological resources. The significance of an impact depends on:

- The cultural resource affected;
- The nature of the resource's historical significance;
- How the resource's historical significance is manifested physically and perceptually;
- Appraisals of those aspects of the resource's integrity that figure importantly in the manifestation of the resource's historical significance; and
- How much the impact will change those integrity appraisals.

At Title 14, California Code of Regulations, section 15064.5(b)(1), the CEQA Guidelines define a substantial adverse change as "physical demolition, destruction, relocation or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired."

Historical Resources Inventory

The development of the inventory of historical resources in and near the proposed project area is the requisite first step in the assessment of whether the project may cause a substantial adverse change (as defined at Pub. Resources Code §21084.1) in the significance of a historical resource, and may therefore have a significant effect on the environment. The effort to develop the inventory has involved conducting a sequence of investigatory phases that includes doing background research, consulting with local Native American communities, conducting primary field research, interpreting the results of the inventory effort, as a whole, and evaluating whether found cultural resources are historically significant. This section discusses the methods and the results of each inventory phase, develops the historical resources inventory for the analysis of the proposed project, and interprets the inventory to assess how well it represents the archaeology of the PAA.

PROJECT AREA OF ANALYSIS

The PAA is a concept that staff uses to define the geographic area in which the proposed project has the potential to affect cultural resources. The effects that a project may have on cultural resources may be immediate, further removed in time, or cumulative. They may be physical, visual, auditory, or olfactory in character. The geographic area that would encompass consideration of all such effects may or may not be one uninterrupted expanse. It may include the project area, which would be the site of the proposed plant (project site), the routes of requisite transmission lines and water and natural gas pipelines, and other offsite ancillary facilities, in addition to one or several discontiguous areas where the project could be argued to potentially affect cultural resources.

Staff defines the PAA as comprising (a) the proposed project site, (b) an architectural study area set approximately one parcel beyond the proposed project site, (c) the onsite construction parking area, (d) four off-site construction parking areas, and (e) the off-site construction laydown area at the Alamitos Generating Station in Long Beach, Los Angeles County (AES 2012a:Figure 5.3-1).

For ethnographic resources, the area of analysis is expanded to take into account sacred sites, traditional cultural properties (places), and larger areas such as ethnographic landscapes that may be far-ranging, including views that contribute to the historical significance of such historical resources. The NAHC assists project cultural resources consultants and staff in identifying these resources, and consultation with Native Americans and other ethnic or community groups may contribute to defining the area of analysis. For HBEP, staff identified no ethnographic resources and so defined no area of analysis for them.

No excavation is required or proposed within the architectural study area (outside the proposed project site), construction parking areas, or construction laydown area. Demolition and excavation are proposed within the project site, however, to variable depths. The depths of excavation are shown in **Cultural Resources Tables 2–4** and define the vertical limits of the PAA.

Cultural Resources Table 2
Depths of Major Excavations within the Proposed Project Site

Project Element	Area	Depth	Existing Grade (asl)	Foundation Top Elevation (asl)	Excavation Depth (asl)	Estimated Depth of Prior Earthwork (asl)	Natural Grade on Eastern Property Line(asl)
			HBEP Block 1 Area				
CCGT/HRSG Foundation Slab	50 x 130	7	10	12.5	5.5	5.5 (existing conduit) 4 (East Fuel Oil Tank foundation) -10 (grounding anodes) 4 (Unit 5 Distillate Tank)	5
Two Generator Step Up Transformers adjacent to ACC	33 x 46	5	10	12	7	Same as area described above	5
ACC Pile Caps	N/A	3	9–15	12	9	Same as area described above	5
STG Foundation	60 x 55	7	6–15	11	4	Same as area described above	5
Two Generator Step Up Transformers west of Gas Compression Building	33 x 46	5	12	12	7	Unknown	5
Gas Compression Building Foundation	144 x 75	3	12	12.8	9.8	Unknown	5
			HBEP Block 2 Area				
CCGT/HRSG Foundation Slab	50 x 130	7	14	16	9	9.5	8.5
Two westernmost Transformer Foundations	33 x 46	5	10	12	7	3.6	8.5

Project Element	Area	Depth	Existing Grade (asl)	Foundation Top Elevation (asl)	Excavation Depth (asl)	Estimated Depth of Prior Earthwork (asl)	Natural Grade on Eastern Property Line(asl)
Two easternmost Transformer Foundations	33 x 46	5	10	12	7	Unknown	8.5
STG Foundation	60 x 55	7	12.5	12.5	5.5	Unknown	8.5
ACC Pile Caps	N/A	3	12	14.5	11.5	Unknown	8.5
Miscellaneous Excavations							
Relocated Gas Metering Station	82 x 108	3	10	9.5	-3.5	Not reported	Not reported
Ammonia Tank Spill Containment Basin	18 x 38	5	12	12	-5.0	Not reported	Not reported
Ammonia Tank Refilling Station	12 x 56	6	12	12	-6.0	Not reported	Not reported
Perimeter Grounding Cable	Adjacent to struc-tures	2–3	Varies	Varies	Varies	Not reported	Not reported
Grounding Rods	0.75-inch Diameter	20	Varies	Varies	Varies	Not reported	Not reported

Notes: All dimensions are in feet. ACC = air-cooled condenser; asl = above sea level; CCGT = combined cycle gas turbine; HRSG = heat recovery steam generator; STG = steam turbine generator
Sources: AES, with CH2M Hill 2012:41–48; Foster 2012:1–2

Cultural Resources Table 3
Utility Trench Excavations

Utility	Length	Preliminary Depth to Bottom of Trench	Preliminary Trench Bottom Width
Storm Drain	4,150	7.58	5.00
Low Pressure Gas	1,209	7.25	5.00
High Pressure Gas	2,276	6.92	5.00
Potable Water	2,176	5.75	5.00
Fire Water	6,092	5.75	5.00
Process Water One	2,094	5.75	5.00
Process Water Two	2,637	5.75	5.00
Sanitary Sewer	1,200	8.00	5.00
60 x 30[a] Duct Bank	3,486	5.33	6.33

Notes: a = 60 feet by 30 feet; all other dimensions are in feet
Source: AES, with CH2M Hill 2012:41–48

Cultural Resources Table 4
Depths of Excavation: Electrical Structures

Project Element	Foundation Diameter	Foundation Depth	Existing Grade (asl)	Foundation Top Elevation (asl)	Excavation Depth (asl)	Estimate Depth of Previous Excavation (asl)
Single-circuit pole east of Gas Compression Building	6	18	12	12		Unknown
Single-circuit pole west of Gas Compression Building	6	18	13	12	Unknown	Unknown
Single-circuit pole north of Block 2 ACC	6	18	12.5	13	Unknown	Unknown
Single-circuit pole next to Intake Structure	6	18	12	12	-6	3.6
Single-circuit pole next to Pump Well	6	18	12	13	-5	-5

Notes: ACC = air cooled condenser; asl = above sea level; all dimensions are in feet
Source: AES, with CH2M Hill 2012:41–48

Background Research

The background research for the present analysis employs information that the applicant and Energy Commission staff gathered from literature and record searches, and information that staff obtained as a result of consultation with local Native American communities and the city of Huntington Beach. The purpose of the background information is to help formulate the initial cultural resources inventory for the present analysis, to identify information gaps, and to inform the design and the interpretation of the field research that will serve to complete the inventory.

Literature Review and Records Search

The literature review and records search portion of the background research attempts to gather and interpret documentary evidence of the known cultural resources in the project area of analysis. The source for the present search was the South Central Coastal Information Center (SCCIC) of the California Historical Resources Information System (CHRIS).

CHRIS Search

Methods

CH2M Hill, the cultural resources consultant to the applicant, requested records searches from the SCCIC for the proposed project on March 20 and July 30, 2012

(SCCIC # 11786.8528). The records searches covered the project site and a 1-mile radius surrounding it, as well as a 0.25-mile radius from the proposed parking areas (AES 2012b:5.3-1; Cardenas et al. 2012:3-1, Appendix 5.3C). The records search for the proposed off-site construction laydown area was included in the records search for a separate project application; this records search was conducted on August 31, 2011 for the proposed laydown area and a 1-mile radius surrounding it (SCCIC #s 11784.8527, 11786.8528) (AES 2012b:5.3-1). The records searches included examinations of the SCCIC's base maps of previous cultural resource studies and known cultural resources as well as:

- The NRHP
- The CRHR
- California Historical Landmarks listings
- California Points of Historical Interest listings
- Historic Property Data File (Noyes 2011:2; OHP 2011:204)
- Archeological Determinations of Eligibility (California OHP 2011:98; Noyes 2011:1)
- Historic maps (USGS [U.S. Geological Survey] 1896a, 1896b, 1942, 1943, 1945)

Results

The records searches indicate that 22 previous cultural resource studies have been conducted in the records search area; of these, six cultural resource studies have previously been conducted within or adjacent to the PAA (**Cultural Resources Tables 5** and **6**).

Cultural Resources Table 5
Records Search Results within or adjacent to the PAA

Author and Date of Study	SCCIC Study Number	Resources Identified in PAA
Ahlering 1973	OR-00001	None
Brown and Maxon 2010	OR-03842	P-30-176946
Hoover 2000	OR-02456	None
Mason 1987	OR-02033	None
Padon 1987	OR-00880	None
Romani 1982	OR-00644	None

Cultural Resources Table 6
Records Search Results: Studies within 0.25–1.00 Mile of PAA

Author and Date of Study	SCCIC Study Number
Billat 2003	LA-06909
Bonner 2007	OR-03450
Davy 1997	OR-01931
de Barros et al. 2002	OR-02585
de Barros et al. 2005	OR-03316
de Barros et al. 2006	OR-03317
Demcak 1999	OR-02256
Dillon 1997	OR-01629
Duke 2000	OR-02229
Lapin 2000	OR-02134

Author and Date of Study	SCCIC Study Number
Losee 2009	OR-03582
McKenna 1990	LA-02114
McKenna 2001	LA-05215
Mason and Chandler 2003	OR-03614
Strudwick 2004	LA-08487
Strudwick et al. 1996	LA-05890

Of the six previous cultural resource studies conducted in the PAA, one was a regional archaeological research design (Mason 1987) and will not be discussed further in this subsection. Hoover (2000) conducted a records search that included the PAA, but no pedestrian survey. The remaining studies comprised pedestrian archaeological surveys in or adjacent to the PAA. These are summarized in chronological order here. Ahlering (1973:2, 58, 63, 65) reports a scientific resources survey of the city of Huntington Beach, including pedestrian survey, observation of construction grading at known archaeological sites, field inspection of select historic buildings and structures, and test excavations. No cultural resources were documented in the present PAA. Romani (1982) documents an archaeological survey of the proposed widening of PCH. The survey intersected two of the proposed off-site construction parking areas. No cultural resources were identified in these areas. Padon (1987) surveyed a portion of Beach Boulevard adjacent to the proposed off-site construction parking areas at the Beach Boulevard-PCH intersection. No cultural resources were identified. Brown and Maxon (2010) surveyed the proposed Poseidon Desalination Plant, which is situated in the historic built environment portion of the present PAA, and recorded three historic fuel storage tanks (P-30-176946; see below).

The records search indicates that a total of seven cultural resources have been previously recorded in the records search area (**Cultural Resources Table 7**). Of these, only P-30-176946 is located in the PAA.

Cultural Resources Table 7
Records Search Results: Previously Recorded Cultural Resources

Resource Designation	Type	Description	Project Component	CRHR Status	Source
P-30-149 (CA-ORA-149)	Prehistoric archaeological site	Shell midden	Records search area	Recommended eligible	Ahlering 1973; de Barros et al. 2002, 2005, 2006; Dillon 1997; Douglas 1980; McKinney 1964
P-30-276 (CA-ORA-276)	Prehistoric archaeological site	Unknown	Records search area	Unevaluated	Ahlering 1973
P-30-1531	Natural shell midden	Natural shell midden	Records search area	Recommended ineligible	AES 2012a:5.3-16; Cardenas et al. 2012:4-2; Duke 1999, 2000
P-30-1654 (CA-ORA-1654H)	Historic archaeological site	Dump site	Records search area	Recommended ineligible	de Barros et al. 2002, 2005, 2006; Dillon 1997

Resource Designation	Type	Description	Project Component	CRHR Status	Source
P-30-176946	*Historic structures*	*Huntington Beach Generating Station Fuel Tanks*	*Adjacent to Project Site*	*Recommended ineligible*	*AES 2012a:5.3-16; Brown and Maxon 2010:MS-1*
P-19-1821	Prehistoric archaeological site	Shell midden	Records search area	Unevaluated	McKenna 1990
P-19-186880	Historic structures	Alamitos Generating Station Fuel Oil Tank Farm	Records search area	Recommended ineligible	Strudwick 2004

P-30-176946

The Edison Plant, currently known as the Huntington Beach Generating Station (HBGS), is a natural gas-fired steam electric generating facility and is composed of a number of buildings and structures. **Cultural Resources Table 8** lists these buildings and structures along with their construction date as found in the AFC.

Cultural Resources Table 8
Buildings and Structures of the Huntington Beach Generating Station

Building/Structure Name	Date of Construction
Power generating Units 1 and 2	1958
Power generating Units 3 and 4	1960–1961
Power generating Unit 5	1969
Administration Building	1958
Office Building	1958
East Fuel Storage Tank	1961
Distillate Fuel Storage Tank	1962
Substation Shed	1958
Switchyard	1960s
Transmission Line Towers	1958
Water Tanks	1958
Water System Building	Unknown
Gas Control Building (and associated pipeline)	1959
Plains Pipeline Terminal Building	ca.1960
Turbine Shelter	ca.1980
RO/EDI Building	ca.1985
GE Phone Interface Building	ca.1960
Gantry Crane and Tracks	1958–1960

HBGS is one of a large system of generation stations that produces power distributed by SCEC throughout Southern California. The HBGS power block has five units that were designed with a once-through cooling system using ocean water. Each unit contains its own boiler, which each serve a single turbine generator. As stated in the AFC, initial construction of the facility primarily took place from 1958–1969 with Units 1 and 2 becoming operational in 1958. Units 3 and 4 followed in 1961, and finally Unit 5 in 1969. Other buildings and structures were built as needed with the latest major additions in the 1980s, as noted in the table above. The site is substantially covered with hardscape and buildings with only a few trees and bushes along the perimeter and entrance on Newland Avenue and a small grassy area east of the Administration Building.

Additional Literature Review

Staff conducted additional research at the California History Room of the California State Library in Sacramento as well as online sources, and examined the reports contained in the applicant's records searches to improve the historic map coverage acquired by the applicant (AES 2012b:5.3-1; Cardenas et al. 2012:3-1, Appendix 5.3C; Department of Public Works n.d.). The purpose of this research was to obtain a visual understanding of the natural and cultural development of the land in and around the PAA, identify locations of potential historic built environment and archaeological resources, and have a partial, chronological record of disturbances in the PAA. To this end, staff attempted to locate a detailed map of the PAA at 10-year intervals[13], beginning about A.D. 1769 and moving toward the present. Even though Sanborn Fire Insurance maps are among the most detailed historic maps available for the urban United States (Karrow and Grim 1990:214, 215), staff did not consult these maps because the PAA was urbanized after the latest fire insurance maps were drafted and therefore would not have been included in the mapping area. All consulted historic maps are presented in **Cultural Resources Table 9**.

Cultural Resources Table 9
Historic Maps Consulted

Map Name	Scale	Survey Date	Reference
Map of Private Grants and Public Lands	Not specified	About 1869	Day 1869
Map of the County of Los Angeles	1 inch = 2 miles	About 1877	Wildy and Stahlberg 1877
Santa Ana Quadrangle	1 inch = 1 mile	1894	USGS 1896a
Downey Quadrangle	1 inch = 1 mile	1894	USGS 1896b
Corona Quadrangle	30-minute	About 1902	USGS 1902
Alamitos Mining Plat	1 inch = 600 feet	1905	GLO 1905
Supervisorial Districts of Orange County	Not specified	About 1912	McBride 1912
Survey Plat, T 5 S, R 12 W	1 inch = 0.5 mile	1914	GLO 1914

[13] Five- to 10-year intervals are widely regarded as a reasonable basis on which to observe mapped changes in landscapes and settlement patterns in historical research (Conzen 1990:189).

Map Name	Scale	Survey Date	Reference
Paved State and County Highways	Not specified	About 1916	McBride 1916
Official Map of Orange County	Not specified	About 1918	Finley and McBride 1918
The Official Map of Orange County	Not specified	About 1922	Finley and McBride 1922
Metzger's Map of Orange County	Not specified	About 1939	Metsker 1939
Santa Ana Quadrangle	1 inch = 1 mile	Culture revised in 1900	USGS 1945
Newport Beach Quadrangle	1 inch = 2,000 feet	Culture/drainage revised from aerials taken 1947	USGS 1949a
Los Alamitos Quadrangle	1 inch = 2,000 feet	Culture/drainage revised from aerials taken 1947	USGS 1949b
Los Alamitos Quadrangle	1 inch = 2,000 feet	Culture/drainage revised from aerials taken 1947	USGS 1950
Newport Beach Quadrangle	1 inch = 2,000 feet	Culture/drainage revised from aerials taken 1947	USGS 1951
Newport Beach Quadrangle	1 inch = 2,000 feet	Aerial photographs taken 1963	USGS 1972
Los Alamitos Quadrangle	1 inch = 2,000 feet	Aerial photographs taken 1963	USGS 1981

Staff's examination of documents filed at the Energy Commission for the HBGS Retool Project (00-AFC-13) revealed that a 12-acre portion of the project site was surveyed for the presence of cultural resources. Survey conditions were similar to those described in the present AFC and similar methods were employed in the survey. No cultural resources were identified as a result of the survey. (Farmer 2000:11, Figure 1). The Energy Commission determined that the proposed HBGS Retool Project had the potential to affect buried archaeological resources and imposed nine conditions of certification on the HBGS Retool Project to mitigate any such potential impacts. Included among the conditions was preparation of a cultural resources monitoring and mitigation plan, construction monitoring by a qualified archaeologist, and reporting. Archaeological monitoring was to be conducted in areas where ground disturbance may exceed the depth of fill and in the vicinity of the selective catalytic reduction (SCR) unit. (CEC 2001:49–55; URS 2001:2.) Archaeological monitoring was conducted during construction, June 4–8, 2001 and no cultural resources were identified (URS Corporation 2006:5-1). The final report did not contain monitoring logs, photographs, or descriptions of observed subsurface conditions. Monitoring logs for the HBGS Retool Project were submitted to the Energy Commission's compliance project manager at regular intervals during construction; project conditions of certification did not require resubmittal of the monitoring logs in the final cultural resources monitoring report.

Native American Consultation

Methods

Native American Heritage Commission

The Governor’s Executive Order B-10-11, executed on September 19, 2011, directs state agencies to engage in meaningful consultation with California Indian Tribes on matters that may affect tribal communities. The California Resources Agency adopted a Final Tribal Consultation Policy on November 20, 2012. The recently adopted policy exhorts informed agency decision-making by collaborative work with tribes to seek positive, achievable, and durable outcomes. The Energy Commission Siting Regulations require applicants to contact the NAHC for information on Native American sacred sites and a list of Native Americans interested in the project vicinity, then notify the Native Americans on the NAHC’s list about the project and include: a copy of all correspondence with the NAHC and Native Americans, any written responses received, and a written summary of any oral responses in the AFC (20, Calif. Code Regs., §1704[b][2], App. B[g][2][D]).

The NAHC is the primary California government agency responsible for identifying and cataloging Native American cultural resources, providing protection to Native American human burials and skeletal remains from vandalism and inadvertent destruction, preventing irreparable damage to designated sacred sites, and preventing interference with the expression of Native American religion in California. It also provides a legal means by which Native American descendents can make known their concerns regarding the need for sensitive treatment and disposition of Native American burials, skeletal remains, and items associated with Native American burials.

The NAHC maintains two databases to assist cultural resources specialists in identifying cultural resources of concern to California Native Americans, referred to by staff as Native American ethnographic resources. The NAHC’s Sacred Land’s database has records for areas, places, sites and objects that Native Americans consider sacred or otherwise important, such as cemeteries and gathering places for traditional foods and materials. Their Contacts database has the names and contact information for individuals, representing a group or themselves, who have expressed an interest in being contacted about development projects in specified areas.

Results

Results of Inquiries Made to NAHC and NAHC Listed Native American Entities

Both the applicant and staff requested information on the presence of sacred lands in the vicinity of the proposed project, as well as a list of Native Americans to whom inquiries should be sent to identify both additional cultural resources and any concerns the Native Americans may have about the proposed project.

The applicant’s consultant, CH2M Hill, contacted the NAHC on August 27, 2011. The NAHC responded on August 31, 2011, indicating that there were no known cultural resources listed in the NAHC Sacred Lands File that were in the project area, and provided a list of Native American contacts. CH2M Hill made letter contact on September 2, 2011 and followed up with phone calls on March 16, 2012. Several tribes responded by asking for additional information.

Staff contacted the NAHC on August 2, 2012, and requested a search of the Sacred Lands File and a Native American contacts list. The NAHC responded on August 4, 2012, with a list of Native Americans interested in consulting on development projects in the project area. A check of the NAHC sacred lands files resulted in negative findings within one-half mile radius of the proposed project. Staff sent letters to all of the NAHC-listed tribes on November 1, 2012, inviting them to comment on the proposed project and offered to hold face-to-face consultation meetings if any tribal entities so requested. Follow-up phone calls were made by staff on December 4, 2012. Subsequent email and phone conversations also occurred on December 6, 7, and 12, 2012. Staff received comments from the Juaneño Band of Mission Indians, Acjachemen Nation; Gabrielino-Tongva Tribe that tribal monitors should be required during project ground disturbing activities.

Consultation with Others

Staff consulted with the city of Huntington Beach regarding the history of the area and locally listed historical resources.

Cultural Resources Distribution Models

One critical use of the information drawn together during the background research for a cultural resources analysis is to inform the design and the interpretation of the field research that will complete the cultural resources inventory for the analysis. The background research for the present analysis has identified one previously recorded cultural resource on the project site, P-30-176946 (aka, the Edison Plant and HBGS) (see “California Historical Resources Information System Search” section above), and found that the entire PAA has been subject to cultural resources survey. A further role of background research is to help develop predictive or anticipatory models of the distribution of cultural resources across a project area of analysis. Such models of the types of archaeological, ethnographic, and built-environment resources, and the patterns of their distribution across and beneath the surface of the landforms of the project area of analysis, provide the means to tailor more appropriate research designs for the field investigations that will complete a cultural resources inventory, and help gauge the degree to which the results of those investigations may reflect the actual population of archaeological, ethnographic, and built-environment resources in the project area of analysis. Such models also provide important contexts for the ultimate interpretation of the results of those investigations.

Models of the distribution of prehistoric archaeological sites, ethnographic resources, and historical archaeological sites and built-environment resources are developed in this document and draw on information in the “Environmental Setting,” “Prehistoric Setting,” “Ethnographic Setting,” and “Historic Setting” subsections, in addition to information in the “Background Research” subsection. Staff formulated data requests during the discovery phase of the present certification process on the basis of these models to ensure the collection of enough information to factually support the conclusions of this analysis. The discussions in the “Interpretation of Results” subsection below also employ the models.

Model of Prehistoric Archaeological Resources

Staff concludes that the likelihood of prehistoric archaeological deposits across the surface of the PAA is low and subsurface prehistoric archaeological deposits could be present in the PAA. According to the “Geomorphology” subsection in this portion of the PSA, the sandy ocean shoreline present today began to form between 6000 and 5000 B.P., and was in place by about 4000 B.P. Particularly in the last 4,000 years, sand spits and droughts periodically closed larger estuaries and open bays, producing shallow lagoons and wetlands attractive to waterfowl (Dillon 1997:11; Masters and Aiello 2007:40). That the proposed project site alternated between hosting a sizable lagoon and a closed marsh, or *bolsa*, is evident on historic maps dating from the late nineteenth century until the 1910s (Day 1869; Finley and McBride 1918; McBride 1916; USGS 1896, 1902, 1945; Wildy and Stahlberg 1877). Remnant marshland paralleling the beach remained in the proposed project site until it was filled between 1947 and 1965 (USGS 1949a, 1951, 1972). While occupied by lagoons, the PAA was dominated by three natural features: (1) a sand spit adjacent to or along the western margin of the PAA, (2) a lagoon occupying most of the proposed project site, and (3) the lagoon fringe/alluvial plain. While covered by a bolsa, the PAA would have consisted of marshland and small channels that drained the alluvial plain into the marsh. Human habitation with respect to the lagoon would have been restricted to the sand spit and lagoon fringes. The bolsa would have been less desirable for habitation, barring the potential for isolated (and unmapped) knolls within the marsh. Although the PAA was almost completely covered by lagoons or bolsas from at least 1869 through part of the twentieth century, the location of estuaries, lagoons, and bolsas changed over the past 4,000–5,000 years (Engstrom 2006:852, 854). The surface of the PAA, therefore, cannot be assumed to have been uninhabitable for the entirety of the last 5,000 years. Staff finds that the resource base provided by lagoon and marsh habitats would have been a draw to human use and perhaps habitation of the project vicinity. However, shifting, wet ground surface conditions would have been a deterrent. Previously recorded prehistoric archaeological sites in the project vicinity are located at the edges of bluffs and the former bolsa, or along streams uphill from marshy areas. Furthermore, the extent of paving, prior excavation, and grading in the PAA renders the likelihood of encountering prehistoric archaeological resources on the ground surface very low.

Despite the low potential to identify prehistoric archaeological resources on the surface of the PAA, the present ground surface formed no more than approximately 4000 B.P., accounting for less than half of the span of human occupation on this coast. Prior to 4000 B.P., mean sea level was lower than today and watercourses and other aquatic features could have been positioned differently than in modern times, altering the suitability of the PAA for human habitation. The potential to encounter buried prehistoric archaeological resources during construction must be assessed because pre-4000-B.P. landforms in the project vicinity, unless eroded, are buried under the present land surface.

The AFC states that previous ground disturbance at the proposed project site—the only portion of the PAA for which excavation and grading are planned—has reduced the likelihood of encountering buried archaeological resources to a low level. The AFC points out that during construction of the existing HBGS, about 8 feet of clay was removed from the area and replaced with an undisclosed quantity of fill[14]. (AES 2012a:5.3-19, 5.8-3; AES 2012b:5.3-5; Cardenas et al. 2012:4-3.) Staff agrees that the removal of a large package of native sediments and replacing it with fill reduces the probability of encountering buried archaeological resources. However, the discovery probability can only be considered moot if one or more of three conditions are met: (1) proposed ground disturbance is restricted to fill sediments, (2) underlying sediments are older than the expected span of human use of the project vicinity (that is, Pleistocene or older), or (3) Holocene-age sediments in the PAA are eroded or posses other qualities unsuitable to the preservation of archaeological materials. Although the AFC does not adequately address any of these conditions, staff and the applicant sought additional information to clarify these issues through staff's additional research and data requests (AES, with CH2M Hill 2012:41–48; CEC 2012a:12–15; Foster 2012; Miller 2012a, 2012b).

Whether the applicant would encounter buried archaeological deposits during construction depends on several factors, including the depositional character and the ages of the sedimentary deposits that construction would disturb, the presence of buried land surfaces or buried surfaces of ancient soils (paleosols), the duration or stability of any paleosols, the post-depositional character of geomorphic processes in the PAA, and the nature of past human activities in the area. The information provided in the AFC and staff analysis do indicate that the proposed project site is in a depositional environment where buried former land surfaces and associated archaeological materials have the potential to be found. Much or all of any such deposition would have occurred within the last 10,000 years. For example, at least one buried prehistoric archaeological site (P-30-1644) has been identified about 11 miles northwest of the proposed project site in a similar, former estuarine setting under 6 feet of fill (Willey 2006). Moreover, between 5450 and 2950 B.P., relatively sedentary (semi permanent) occupations formed around Orange County estuaries (Grenda and Altschul 2002:127). The Environmental and Prehistoric settings in this PSA show that estuarine and marine environments contain abundant resources, which would have been a draw to human use of the project vicinity. Given these qualities of the PAA, staff believes that the PAA could contain buried archaeological resources.

Model of Ethnographic Resources

Ethnography fulfills a supporting role for other anthropological disciplines as well as contributions on its own merits. Ethnography provides a supporting role to the discipline of archaeology by providing a cultural and historic context for understanding the people that are associated with the material remains of the past. By understanding the cultural milieu in which archaeological sites and artifacts were manufactured, used, or cherished, this additional information can provide greater understanding for identification efforts, making significance determinations per CEQA; eligibility determinations for the CRHR; and for assessing if and how artifacts are subject to other cultural resources laws, such as the Native American Graves Protection and Repatriation Act.

[14] Removal of the clay layer apparently was restricted to the areas surrounding the "main building" and "equipment". The AFC does not report its source(s) of information for removal of the clay and subsequent placement of fill. The AFC is unclear about the identity and location of the "main building" and "equipment". (AES 2012a:5.8-3; AES 2012b:5.3-5; Cardenas et al. 2012:4-3.)

In addition, ethnography has merits of its own by providing information concerning ethnographic resources that tend to encompass physical places, areas, or elements or attributes of a place or area. Ethnographic resources have overlap and affinity to historic preservation property types referred to as cultural landscapes, traditional cultural properties, sacred sites, heritage resources, historic properties, or historical resources that are areas or places, and specific historic property or historical resource types of sites, objects, buildings, structures, districts, areas or places. There is notable overlap in terminology when referring to ethnographic resources. Studies that focus on specific ethnographic resource types may also take on names such as ethnogeography, ethnobotany, ethnozoology, ethnosemantics, ethnomusicology, etc. In general, the ethnographic endeavor attempts to minimize human conflict by facilitating an iterative cross-cultural understanding and, by extension, self-awareness.

While several definitions of ethnographic resources can be found in historic preservation literature, the National Park Service (NPS) provides the most succinct and commonly used definition (NPS 2007:Chapter10):

> *Ethnographic resources are variations of natural resources and standard cultural resource types. They are subsistence and ceremonial locales and sites, structures, objects, and rural and urban landscapes assigned cultural significance by traditional users. The decision to call resources "ethnographic" depends on whether associated peoples perceive them as traditionally meaningful to their identity as a group and the survival of their life ways.*

Ethnographic Methods

Ethnographic methods, when applied to projects of limited size and scope involve four steps:

- Step 1 involves reviewing the project description and mapped project location and, based upon the geographic and environmental setting, formulate preliminary guiding questions or research themes that may be asked of people with cultural affiliation to the project area.
- Step 2 involves contacting, informally discussing with, (or formally interviewing) people whom might have a cultural relationship or affiliation to a given area.
- As Step 2 is being conducted, a parallel Step 3 involves an archival “search, retrieve, and assess” process that should be undertaken to provide supporting or conflicting information to what is being discovered through the discussion process. In addition to archive, book store, and other informational repositories (e.g., the internet), the people themselves or other ethnographers with previous experiences with the same people, may provide source materials. Findings in Step 3 may require a repetition of Step 2.
- Step 4 involves field visit(s) that are intended to help the ethnographer triangulate between what people currently say, what people have written in the past, and what is actually or perceived to be in the project vicinity as a potential ethnographic resource.

Preliminary Guiding Research Themes

Based upon the project description and project location maps, two preliminary guiding research themes were developed:

- Research specific Gabrielino Tongva procurement and usage of resources found in Southern California estuary environments and specifically the estuary of Santa Ana River and the adjacent Newport Bay.
- Research the history of Gabrielino settlements near the estuary of Santa Ana River and the adjacent Newport Bay.

As documented previously in this cultural resources section ("Native American Consultation"), staff made preliminary contact with Gabrielinos and Juanenos affiliated with the project area.

As staff did not identify ethnographic resources in the PAA, and because tribal responses were minimal, staff did not conduct ethnographic interviews with tribal people.

Archival Research

Staff made efforts to seek, obtain, and assess culturally relevant information from various archival sources about Native American activities in the Santa Ana River and the adjacent Newport Bay.

Field Visit

Ethnographic staff intends to visit the project area prior to publication of the final staff assessment (FSA).

Ethnographic Method Constraints

None.

Model of Historical Archaeological Resources

The analysis of the information in the "Environmental Setting," "Historic Setting," and "Literature and Records Search" subsections leads to the conclusion that historic archaeological deposits are likely present in low frequency across the surface of the PAA and subsurface historic archaeological deposits are most likely present in low to moderate frequencies as well.

Although historic maps show that the project vicinity was dominated by open lagoons and swamps from the late nineteenth through middle twentieth centuries, squatters were known to inhabit the swamps and railroads and agricultural enterprises took root in the area by the turn of the twentieth century (Milkovich n.d.:1; USGS 1945). Three duck or gun clubs—Newport, Pacific, and Surf—frequented the swamps of the project vicinity as well (Finley and McBride 1918). No substantive construction is evident on historic maps of the proposed project site until sometime between 1939 and 1947, by which time a sewage disposal site and Huntington Beach Airport were situated in the northern half of the proposed project site. The two facilities combined comprised five buildings, one tank, and an airstrip. (Metsker 1939; USGS 1949a, 1951.) Both facilities were removed by 1965 (USGS 1972). Buried historic archaeological resources in the PAA are therefore expected to consist of refuse deposits associated with small-scale domestic, agricultural, and industrial disposal, as well as structural remains of the former sewage disposal site. The likelihood of encountering such resources is low in the southern two-thirds of the proposed project site, moderate in the northern third.

Cultural Resources Inventory Fieldwork

The field efforts to identify cultural resources in the PAA consist of the applicant's pedestrian archaeological and historic built-environment surveys, and staff's field visit to the proposed project site. No new cultural resources have been found in the PAA in addition to P-30-176946. On the basis of the background research for the present analysis and the results of the field efforts that are presently available, the total cultural resources inventory for the PAA includes no archaeological or ethnographic resources, and one built-environment resource.

This section discusses the methods and the results of each field inventory phase and interprets the resultant inventory relative to the cultural resources distribution models above to assess how well the inventory represents the archaeology of the project area. Descriptions of each cultural resource in the inventory, evaluations of the eligibility of each resource for inclusion in the CRHR, assessments of project impacts on each known historical resource, consideration of, and potential impacts on, archaeological resources that may lie buried on the project site, and proposed mitigation measures for significant impacts may be found in the "California Register of Historical Resources Eligibility" and "Identification and Assessment of Direct Impacts on Built-Environment Resources and Proposed Mitigation" subsections below.

Pedestrian Archaeological Surveys

Primary Pedestrian Archaeological Survey

Methods

As stated in the AFC, an archaeologist meeting the Secretary of the Interior's professional qualifications surveyed the proposed project site, offsite construction laydown area, and on- and offsite construction parking areas on September 28–29, 2011. The proposed project site consisted primarily of buildings, structures, pavement, and hardscape, rendering ground surface visibility to zero except in a few areas of broken pavement and missing gravel. These areas were visually inspected as they were encountered. Within the 200-foot survey buffer, the archaeologist encountered streets, sidewalks, a concrete-lined canal, and an open area in the southeastern corner of the proposed project site. The archaeologist surveyed the latter area by walking transects spaced 30 feet apart; the other areas were visually examined as conditions allowed. (AES 2012a:5.3-16, 5.3-19, Figure 5.3-1.)

The proposed offsite parking areas at the northeastern and southwestern corners of Beach Boulevard and PCH are completely paved lots and were not surveyed by the applicant's consulting archaeologist. The proposed offsite parking area within the Plains All American Tank Farm property, adjacent to the proposed project site, was found to contain fill sediments, structures, and hardscape. The offsite parking area adjacent on the northwestern corner of the proposed project site is covered in gravel. The proposed offsite construction laydown area at the Alamitos Generating Station was found to be graded. No native soils were visible on the surface. (AES 2012a:5.3-19, Figure 5.3-1.)

Results

No archaeological resources were identified in the PAA as a result of the survey (AES 2012a:5.3-19).

Results of Ethnographic Resources Investigations

Staff research suggests that any ethnographic resources that may be in the project vicinity—specifically the ethnographic villages or camps named Lopuuknga, Kenyaanga and one unnamed camp or village—are not likely to be in the proposed project site because it is predominately located on fill materials that covered over former estuary or marsh lands associated with the Santa Ana River. However, the coastline in this area is dynamic and shifts and one village or camp could have been near the project area.

As a result of ethnographic research, staff concludes that there are no known ethnographic resources that will be impacted by the proposed project.

Historic Built Environment Survey

Methods

The inventory of cultural resources in a PAA is the collective result of archival and literature research, discussions with local governments and public interest groups, and field investigations conducted both by staff and the applicant. On September 28, 2012, staff performed a survey of the project site as well as the surrounding area in order to determine potential impacts of the proposed project on built-environment resources.

Results

For the proposed HBEP, efforts have led to the identification of one built-environment historical resource in the PAA, P-30-176946 (the Edison Plant), which is currently listed on the city's Local Landmarks list as a result of the 1986 Survey. As was previously stated, in 2008 Galvin Preservation Associates Inc. was contracted by the city to update and expand the city's existing 1986 Survey. The findings of the most recent survey have been documented in a report, *City of Huntington Beach Historic Context & Survey Report*, and submitted to the city for their review (Galvin 2012). The latest version of this report is in its second draft and was prepared in December 2012. This latest survey recommends that the Edison Plant is not eligible for NRHP, the CRHR, or for local listing. Additionally, it is not listed on nor has been found eligible for either the National Register of Historic Places or the California Register of Historical Resources in any documentation provided by the applicant or discovered by staff to date. However, as the city has not formally accepted the Galvin 2012 report this issue is considered outstanding. The description of this resource and staff's recommendations on its historical significance and whether this resource warrants further consideration under CEQA, will be located in the "Determining the Historical Significance of Cultural Resources" subsection of the FSA. There are no other NRHP or CRHR-listed resources within the PAA.

Interpretation of Results

Model of Prehistoric Archaeological Resources

The AFC asserts that the PAA has little potential to contain prehistoric archaeological resources on the ground surface because of the degree of surface disturbances and development. The AFC states that buried archaeological resource potential also is low, assuming that all construction-related ground disturbance would occur in imported fill deposits. Staff conducted further research and analysis to estimate the depth of fill across the proposed project site; whether and where proposed excavation would penetrate native sediments; and the age, characteristics, and preservation potential of any underlying native sediments.

AFC and supporting documentation state that the project site rests atop 2–3 feet of fill dirt in the vicinity of the proposed combined-cycle gas turbine Block 1 (AES 2012a:5.8-3; Ninyo & Moore 2011:Boring Logs 1–2, Figure 3). In addition, the AFC reports that prior to the original construction of the HBGS, approximately 8 feet of a natural clay layer was removed from portions of the HBGS and replaced with engineered fill (AES 2012a:5.8-3; AES 2012b:5.3-5; Cardenas et al. 2012:4-3). The amount of sediment removed from the HBGS site actually varied from about 2 to 23 feet, according to the applicant’s response to Energy Commission Data Requests 35 and 36 (AES, with CH2M Hill 2012:Figure DR35-1).

Project-specific borings and cone-penetration test indicate that the underlying natural sediments are wind-deposited (eolian) sediments and alluvium or estuarine sediments. The eolian sediments were removed during construction of the HBGS and were not encountered during geotechnical testing. Estuarine/alluvial sediments were encountered to a depth of 9–23 feet below ground surface. These deposits were interbedded layers of very soft to stiff clayey silt and silty clay, as well as loose, silty sand and sandy silt. Shell fragments were found throughout the estuarine/alluvial deposits. Beneath the estuarine/alluvial sediments are marine sediments to the maximum extent of testing, which was 51.5–75.5 feet below the present ground surface. Marine sediments were dense, poorly graded sand with silt as well as poorly graded sand, all of which contained shell fragments. (AES 2012a:5.8-6, 5.8-7; Morton 2004; Ninyo & Moore 2011:5–6, Boring Logs 1–2.)

Radiocarbon dates from the adjacent, proposed Poseidon Desalination Project support the notion that the natural sediments under the proposed project site are Holocene in age and therefore, could contain archaeological resources. Moreover, the radiocarbon dates from Poseidon suggest that the natural sediments most likely to be affected by HBEP construction formed over approximately the last 4,000 years B.P. The radiocarbon dates are relevant to the proposed HBEP because of their proximity to the PAA, similar environmental context and elevation, and comparable sedimentary sequences.

Poseidon borings encountered about 9 feet of fill, followed by 4 feet of estuarine clay and 72 feet of interbedded marine deposits. The latter are dense to very dense sands with varying amounts of marine shell fragments and thin layers of clay and silt. (Geologic Associates 2002:4.)

Nine radiocarbon assays were obtained from four borings in the Poseidon project area, ranging from -7.4 to -74.4 feet asl. The calibrated radiocarbon date from estuarine sediments (-7.4 feet asl) is 1940 B.P., while the shallowest date from marine contexts (-17 feet asl) is 4250 B.P. (Geologic Associates 2002:Table 1.) These dates tentatively place the onset of estuarine conditions in the project vicinity at about 4200 B.P., consistent with the geomorphological discussion contained in the "Environmental Setting" subsection of this PSA.

The fine clays and silts of the proposed project site's estuarine sediments are indicative of low-energy deposition with moderate to high archaeological preservation potential. The presence of coarser-grained sediments (silty sand and sandy silt) within estuarine sediments is suggestive of periodic pulses of alluvial sediment from streams and a higher-energy movement of sediment. Accordingly, archaeological resources at the interface of low-energy and high-energy estuarine deposits may have been eroded. Where such interfaces exist in the PAA, preservation potential would be lower. On the whole, staff estimates the non-fill subsurface of the PAA as moderately sensitive for the presence of buried prehistoric resources.

Model of Historical Archaeological Resources

As discussed previously in this cultural resources section, the extent of disturbance and amount of pavement and superstructure covering the PAA makes it unlikely that historic archaeological resources would be or could be found on the present ground surface. The cultural resources inventory results corroborate this expectation, since no historic archaeological resources were identified on the surface of the PAA and both the applicant and staff used appropriate identification methods.

The potential for buried historic archaeological deposits to occur in the PAA is variable. Structural remnants of the former sewage disposal site and Huntington Beach Airport may be preserved in the northern portion of the PAA, although there is a high probability that some or all such remnants were demolished and removed to permit construction of the current SCEC facility and the HBGS. More likely to occur in the PAA are smaller structural remnants—artifact scatters formed of metal, concrete, and glass building fragments (resulting from demolition)—and refuse scatters associated with industrial disposal practices. Any refuse scatters, too, may have been removed to allow construction of the present facilities. Additionally, the possibility exists that historic artifacts were transported to the PAA within the fill sediments.

California Register of Historical Resources Eligibility

No CRHR-eligible cultural resources have been identified in the PAA.

DIRECT/INDIRECT IMPACTS AND MITIGATION

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

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

Ground disturbance accompanying construction at a proposed power plant site has the potential to directly impact archaeological resources, unidentified at this time. The potential direct, physical impacts of the proposed construction on unknown archaeological resources are commensurate with the extent of ground disturbance entailed in the particular mode of construction. This varies with each component of the proposed project. Placing a proposed power plant in a particular setting could have a direct impact on the integrity of association, setting, and feeling of nearby standing historic structures.

Construction Impacts and Mitigation

Identification and Assessment of Direct Impacts on Archaeological Resources and Proposed Mitigation

Archaeological Resources on the Surface of the PAA

No archaeological resources have been identified on the surface of the PAA. Staff concludes that appropriate methods were employed to identify archaeological resources on the ground surface and therefore construction and operation of the proposed project would not result in direct impacts on this class of cultural resource.

Buried Archaeological Resources in the PAA

No positive identification of buried prehistoric or historic archaeological resources has been made by staff or the applicant. The sediments under the proposed project site are of the right age to have supported the formation of archaeological resources from approximately 4250 B.P. through the middle twentieth century. Preservation potential exists for any such resources as well.

The likelihood that the proposed project would actually result in significant impacts to buried archaeological resources appears low, however. Consulting **Cultural Resources Tables 2–4**, the record shows that six project elements are known to involve construction to a depth that would intersect non-fill sediments, where archaeological resources would most likely be preserved. These project elements consist of the proposed Block 2 CCGT/HRSG foundation slab, the grounding anodes, and four single-circuit power poles. The foundation slab would require excavation of a 50-foot-by-130-

foot area about 0.5 feet into native sediments; excavation would most likely be accomplished via mass soil removal, assisted by an excavator. The grounding anodes would be pressed or vibrated into the ground surface up to 7 feet into native sediments. The power poles would be excavated by a 6-foot-diameter auger up 9.6 feet into native sediments. The proposed parking areas and laydown area do not involve subsurface ground disturbance and therefore their use would have no impact potential for buried archaeological resources.

The proposed excavations described in the previous paragraph all could damage or destroy buried, as-yet-unidentified archaeological resources in the proposed project site. The potential to destroy archaeological resources is greatest with the proposed Block 2 foundation slab because it would require the greatest areal extent of digging. The ground anodes and power poles, on the other hand, have a relatively small footprint and would be more apt to damage buried archaeological resources rather than destroy them. Nevertheless, both the large- and small-footprint excavations could compromise the information potential of archaeological resources by altering the association of artifacts and features, as well as by damaging or destroying them. Such effects are considered significant impacts under CEQA.

Under other circumstances, staff would request that the applicant conduct an excavation-supported geoarchaeological study to determine the likelihood of encountering buried archaeological deposits in the proposed project site. In the present case, however, staff believes that a disproportionate amount of excavation into non-fill sediments would be required for such a study when compared to the potential project impacts. Furthermore, the existence of radiocarbon dates from an adjacent property in the same environmental setting gives staff high confidence that while the potential for buried archaeological deposits under the proposed project site is moderate, the limited amount of excavation into non-fill sediments proposed renders the probability of encountering any such resources low. Therefore staff concludes that existing information is adequate to assess potential impacts and that the Energy Commission’s historic preservation responsibilities are best served to implement a cultural resources mitigation and monitoring program for the proposed project. Implementation of such a program would reduce the potential project impacts to a less-than-significant level.

The AFC contains an outline of such a program, consisting of nine parts:

1. Designated Cultural Resources Specialist (CRS)
2. Construction Worker Training
3. Monitoring
4. Emergency Discovery
5. Site Recording and Evaluation
6. Mitigation Planning
7. Curation
8. Report of Findings
9. Inadvertent Discovery of Human Burials. (AES 2012a:5.3-24–5.3-26.)

Although staff agrees that these components are important to an effective mitigation and monitoring program, staff also proposes a cultural resources mitigation and monitoring plan (CRMMP) with an explicit research design and procedures for the treatment of archaeological and human remains discoveries that may occur during construction. The absence of explicit consideration of the resource types expectable in the PAA and the methods required to evaluate any such resources leaves important decision-making to the time least amenable to responsible historic preservation practice—the moment of inadvertent discovery. In addition, staff proposes a provision for construction monitoring by local tribal representatives. As described earlier under *Native American Consultation*, some consulted tribal representatives urged that tribal monitors be present during construction because archaeological materials encountered in the PAA would likely be related to their Gabrielino culture. In addition there is a slight potential for buried ethnographic resources in the vicinity of the project and most likely affiliated with the unnamed village/camp mentioned in the ethnographic section above. Staff therefore proposes Conditions of Certification (conditions) **CUL-1** through **CUL-8**, incorporating portions of the applicant's proposed mitigation measures, to reduce the HBEP's potential impacts to a less-than-significant level.

Identification and Assessment of Direct Impacts on Ethnographic Resources

No ethnographic resources have been identified in the PAA. The proposed project site has slight potential to contain buried ethnographic resources, although these would most likely constitute archaeological resources. While earth-moving could result in significant impacts on ethnographic resources (should any be encountered), proposed Conditions **CUL-1** through **CUL-8** would reduce these potential impacts to a less-than-significant level.

Identification and Assessment of Direct Impacts on Built-Environment Resources and Proposed Mitigation

The only potential built-environment historical resource that could be impacted by the proposed project is the Edison Plant, now known as the HBGS. Consultation is ongoing with the city of Huntington Beach to determine the nature of the local listing. If it is determined that it is a historical resource under CEQA, the FSA will include a discussion of impacts and recommended conditions of certification.

Indirect Impacts

Neither the applicant nor staff has identified any indirect impacts on any cultural resources that qualify as historical resources or unique archaeological resources under CEQA. Staff believes, therefore, that mitigation for indirect impacts is not necessary for the proposed project.

Operation Impacts and Mitigation

During operation of the proposed project, if a leak should develop in buried pipelines within the project site, repair of the buried utility could damage previously unidentified, subsurface archaeological resources in areas unaffected by the original excavation. The measures proposed above and below for the mitigation of impacts to previously unknown archaeological resources found during construction would also mitigate impacts that occur during operation-phase repairs.

Cumulative Impacts and Mitigation

A project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. “Cumulatively considerable” means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (14 Calif. Code Regs., §15130; see also 36 C.F.R., part 800.5[a][1]; 40 C.F.R., §1508.7). Cumulative impacts to cultural resources in the project vicinity could occur if any other existing or proposed projects, in conjunction with the proposed HBEP, had or would have impacts on cultural resources that, considered together, would be significant. The previous ground disturbance from prior projects and the ground disturbance related to construction of the proposed HBEP and other proposed projects in the vicinity could have a significant cumulative effect on subsurface archaeological deposits, both prehistoric and historic. The alteration of the setting which could be caused by the construction and operation of the proposed HBEP and other proposed projects in the vicinity could also have a significant cumulative impact to cultural resources.

For the purposes of this cumulative impacts analysis, staff has determined that the cumulative area of analysis for archaeological resources comprises the open coastline from San Pedro southeast to the San Joaquin Hills and northeast on the Los Angeles Plain to the foot of the Santa Ana Mountains, approximately a 20-mile radius from the proposed project site. Staff selected this area for the archaeological cumulative impact analysis because it forms a geographic unit that was probably meaningful to the prehistoric human inhabitants of the project vicinity and encompasses a similar range of cultural resource types throughout: prehistoric shell midden, occupation, and resource processing sites; historic industrial resources; historic refuse scatters; and the remnants of historic residences and commercial properties. Accordingly, the 20-mile radius from the project site forms a useful basis for assessing cumulative impacts on archaeological resources. In selecting projects that could contribute to cumulative impacts, staff identified those projects in the 20-mile radius that would result in ground disturbance because excavation is the primary vehicle for cultural resources impacts for the proposed project. Staff presents its list of cumulative projects for cultural resources in **Cultural Resources Table 10**.

Staff identified 42 projects within the 20-mile archaeological cumulative analysis area that are relevant to assessing the HBEP’s contribution to cumulate impacts (**Cultural Resources Table 10**). Staff was unable to locate environmental documentation for seven of the cumulative projects, rendering these projects’ contribution to cumulative impacts as unknown. Five of the cumulative projects would affect, in aggregate, eleven archaeological resources. Mitigation measures were proposed to reduce archaeological impacts to a less-than-significant level. Six of the projects were determined to have no impact on cultural resources, while the remaining 24 projects had the potential to affect unknown archaeological resources or human remains, but proposed mitigation was regarded as sufficient to reduce the potential impacts to a less-than-significant level. Similarly, construction of the proposed HBEP could result in damage to as-yet-unidentified archaeological resources or human remains, or both. Such resources could qualify as historical resources or unique archaeological resources, as defined by CEQA, and therefore damage to these kinds of resources would be a significant impact under

CEQA. Staff, however, proposed Conditions of Certification **CUL-1** through **CUL-8** to reduce this potential impact to a less-than-significant level. These eight conditions of certification provide a comprehensive construction monitoring and discovery response protocol that would reduce the damage done to archaeological resources and human remains, and compensate for damage inadvertently caused during construction. Since the impacts from the proposed HBEP would be mitigated to a less-than-significant level by the project's compliance with proposed Conditions **CUL-1** through **CUL-8**, and since similar protocols have been applied to other projects in the area, staff does not expect any incremental effects on archaeological resources of the proposed HBEP to be cumulatively considerable when viewed in conjunction with other projects.

The cumulative area of analysis for built environment cultural resources is the city of Huntington Beach. Of the 25 past, present, and foreseeable projects proposed in the city, six have the potential to have significant impacts on built environment historical resources: the Warner-Nichols Project, Archstone Residential Project, Beach and Ellis Project – Elan Apartments, Edinger Walmart project, and the Former Lamb and Wardlow School sites. Some of these projects either have not gone through the environmental review process or the documents were inadequate to determine if built environment historical resources could be impacted. In order to be as conservative and inclusive as possible, the six projects included in this cumulative analysis include project sites with historic-age buildings, regardless of whether or not an eligibility determination was made. Only one project included known locally listed resources. The Edison Plant, which would be demolished as part of the proposed project, is listed on the local register by the city as a significant local resource; however, as discussed above, the local register is being updated and the Edison Plant may no longer be listed in the near future. It is not listed on nor has been found eligible for either the NRHP or the CRHR in any documentation provided by the applicant or discovered by staff to date. Staff is in the process of consulting with the city and hopes to have a final determination by the city prior to the publication of the FSA; however, the city has indicated that a decision might not be made until the end of the year. This information is necessary in determining cumulative impacts for the proposed project and will be included in the FSA.

Cultural Resources Table 10
Summary of Cumulative Projects—Archaeological Resources

Project Title	Location	Project Description	Resources Affected/Level of Significance	References
Poseidon Desalination Plant	Cities of Huntington Beach and Costa Mesa	Construct and operate a seawater desalination facility in Huntington Beach, including the facility, electrical substation, booster pump stations, and transmission pipelines	No impact	Brown and Maxon 2010:16; RBF 2005:5.9-28

Project Title	Location	Project Description	Resources Affected/Level of Significance	References
Beach and Ellis Mixed-Use Project	City of Huntington Beach, 18502 and 18508 Beach Blvd	Build apartment complex, 8,500 sf of commercial property, and 48,000 sf of open space	None/LTSWM	Atkins 2011a:Section 4.4
ASCON Landfill Site	City of Huntington Beach, southwest corner of Magnolia St and Hamilton Ave	Hazardous material cleanup	None/LTSWM	Garcia 2009; PCR 2009:30–32
Beach and Edinger Corridors Specific Plan	City of Huntington Beach, Beach Blvd–Edinger Ave corridor	Development planning tool	SU	PBS&J 2009:Section 4.4
Murdy Commons	City of Huntington Beach, northeast corner of Edinger Ave and Gothard St	Develop up to 984 dwelling units and commercial area on a 12.5-ac site. All existing improvements on the project site would be demolished.	Potential archaeological damage/LTSWM	PBS&J 2010a:Section 4.4
Brightwater Specific Plan and Annexation	City of Huntington Beach, County of Orange	Annex a housing development into the city	No impact; Native American human remains found previously	Carcamo 2008a–e, 2009; HB n.d.a:28–29
Huntington Beach Senior Center	City of Huntington Beach, Talbert Ave at Golden West St	Build 45,000 ft^2 senior center in Central Park	P-15-142, potential damage to archaeological resources and human remains/LTSWM	Atkins 2011b:Section 4.4; EIP 2007:Section 4.4; O'Neil and Hunt 2007:29–30; PBS&J 2007:Section 4.4
Tri Pointe Homes Wardlow Residential Subdvision	City of Huntington Beach, 9191 Pioneer Drive	Demolish all existing improvement, develop 49 single-family homes	Potential impacts to Wardlow School, archaeological resources, and human remains/LTSWM	HB 2012a:61–64
Center Avenue Skate Park	City of Huntington Beach, between Center and Mcfadden avenues	Build skate park	Potential damage to archaeological resources and human remains/LTSWM	PCR 2012a:35–36

Project Title	Location	Project Description	Resources Affected/Level of Significance	References
The Village at Bella Terra	City of Huntington Beach, 7777 Edinger Ave	Build mixed-use commercial and residential project	Potential damage to archaeological resources and human remains/LTSWM	PBS&J 2008a:Section 4.4; PBS&J 2010b:3-3
The Ripcurl Project	City of Huntington Beach, 7302–7400 Center Ave	Build mixed-use commercial & residential development	Potential damage to archaeological resources and human remains/LTSWM	PBS&J 2008b:Section 4.4
Hilton Waterfront Beach Resort Expansion	City of Huntington Beach, 21100 Pacific Coast Highway	Build tower to 9 stories, meeting space, eateries	Potential damage to archaeological resources/LTSWM	Atkins 2012:3-34
Tri Pointe Homes Lamb Residential Subdivision	City of Huntington Beach, 10251 Yorktown Ave	Demolish Lamb School, create 81 residential lots	Destruction of Lamb School, potential damage to archaeological resources and human remains/LTSWM	HB 2012b:64–67
Harmony Cove Marina Development	City of Huntington Beach, 3901 Warner Ave	Build 23-boat slip marina, eatery, office, retail, recreational rentals	No impact	HB n.d.b:41–42
P2-92 Sludge Dewatering and Odor Control	City of Huntington Beach, Santa Ana River channel	Build new sludge and odor control facilities at existing Plant 2	Potential damage to human remains/LTSWM	OCSD 2012:11–12
Edinger Walmart	City of Huntington Beach	Build new retail in existing space	Unknown	None
Newport Beach City Hall Reuse Project	City of Newport Beach	Mixed use project could include up to 15,000 sf of retail or community center and up to 99,675 sf for hotel use	Potential damage to archaeological resources and human remains/LTSWM	Keeton Kreitzer Consulting 2012
Mater Dei High School Parking Structure	City of Santa Ana, 1202 W. Edinger Ave	Three-level parking structure	Unknown	None
Coastal Treatment Plant Export Sludge Force Main Replacement	Aliso Viejo, AWMA Rd at Alicia Pkwy	Replacement of 16,600 ft of two 4-inch iron pipelines, eastern side of Aliso Creek	Damage to CA-ORA-581, CA-ORA-582, and unknown archaeological resources/LTSWM	DUDEK 2012a:4.5-14, -15

Project Title	Location	Project Description	Resources Affected/Level of Significance	References
Sexlinger Farmhouse and Orchard Residential Development Project	City of Santa Ana, E. Santa Clara Ave at Tustin Ave	Construct 24 single-family homes on 5 ac	Potential damage to unknown archaeological resources/ LTSWM	URS 2013:5-41
Los Trancos Facilities Improvements	Laguna Beach, PCH and Crystal Cove State Park	Parking and path improvements	LTS	DPR 2012:29
Cypress Community College AST	9200 Valley View St	Construct storage tank	Unknown	Unknown
Radha Raman Vedic Mandir	City of Placentia, 1022 N. Bradford Ave	Build church	Unknown	Unknown
ND-12-02 Aliso Creek Pedestrian Bridge/Service Road	City of Laguna Woods	Replace pedestrian bridge with new build	Unknown	Unknown
Warner-Nichols Project	City of Huntington Beach, Warner Ave at Nichols Lane	Demolish six buildings	Potential damage, unknown archaeological resources/LTSWM	ICF 2012:3.1-19–3.1-21
Back Bay Landing Project	City of Newport Beach, East Coast Hwy at Bayside Drive	Mixed commercial/residential project, underground parking structure	Potential damage, unknown archaeological resources/PS	PCR 2012b:3-7, 3-8
Robert Diemer Filtration Plant Improvements	Yorba Linda, Valley View Ave at Bastanchury Rd	Excavate new reservoir foundation, install underground pipelines	Unknown	Unknown
Uptown Newport Village	City of Newport Beach, Jamboree Rd at Fairchild Rd	Mixed-use retail and residential project	Potential damage, unknown archaeological resources/LTSWM	The Planning Center 2012:5.4-9
Well #6 Colored WTP	City of Costa Mesa, Harbor Blvd at Gisler Ave	Construct WTP	Unknown	Unknown
Santa Fe Depot Specific Plan	City of Orange, between Walnut and Palmyra Aves	Potential infill development at as many as 11 locations	Potential damage, unknown archaeological resources/LTSWM	HDR 2012:5.2-28
Recycled Water Distribution System Expansion	Laguna Hills and Laguna Woods, Ridge Route Dr and Moulton Parkway	Install 18 mi of water pipelines under existing roads	Potential damage to sites CA-ORA-14, -15, and -268, unknown sites/LTSWM	DUDEK 2012b:52

Project Title	Location	Project Description	Resources Affected/Level of Significance	References
Recycled Water Tertiary Treatment Plant	Laguna Hills and Laguna Woods, Ridge Route Dr and Moulton Parkway	Build tertiary treatment facilities and transmission pipeline	None/LTS	DUDEK 2012c:52–54
General Plan Update EIR (North Newport Center)	City of Newport Beach	Increase the multi-family residential development allocation from 430 units to 524 units on 121 ac	Potential damage, unknown archaeological resources, human remains/LTSWM	T&B 2012:4-22, 4-23
Civic Center and Park Project	City of Newport Beach Avocado Ave and McArthur Blvd	Construction of park, city hall building, and 450 parking spaces	Potential damage to CA-ORA-167/1117, -1461, and -139, human remains/LTSWM	LSA 2009:4.6-17–4.6-24
Fountain Valley Civic Center Specific Plan	City of Fountain Valley, Brookhurst St and Slater Ave	Build Ayres Hotel, 88 residential units (27 single-family, 61 townhomes), and 2,300 sf of retail space on 8.62 ac	No impact	Fountain Valley 2011:21
Pierside Pavilion Expansion	City of Huntington Beach, 300 Pacific Coast Hwy	Expansion of the existing Pierside Pavilion development	No impact	HB 2012c:30
Hyundai Motor America Corporate Campus Project	City of Fountain Valley, 10550 Talbert Ave	Expansion of existing corporate headquarters with a 469,000-sf campus	LTS	RBF 2012:10-4, 10-5
Yakult USA Manufacturing Facility	City of Fountain Valley, 17256 Newhope St	Build a 77,000 sf manufacturing facility on 8.8 ac	No impact	Fountain Valley 2012:33–34
Great Park Neighborhoods (Heritage Fields)	City of Irvine, former El Toro Marine Air Station	Build residential housing, parks, and sports fields/complex	Potential damage to unknown archaeological resources and human remains/ LTSWM	Irvine 2012:8-5, 8-6
Vista Verde	City of Irvine, 5144 Michelon	Build 55 unit project, which is proposing to add 3 additional units to the project	Potential damage to unknown archaeological resources and human remains/ LTSWM	MBA 2010:14–15

Project Title	Location	Project Description	Resources Affected/Level of Significance	References
Pacific City	City of Huntington Beach, 21002 Pacific Coast Highway	Build 516 residential apartments, retail, commercial, and hotel on 31 ac	Damage to CA-ORA-149 and CA-ORA-1582H, unknown human remains/LTSWM	EIP 2003:3.4-16–3.4-20
2802 Kelvin Ave	City of Irvine	Build 384 apartment units	Potential damage to unknown archaeological resources and human remains/LTSWM	Templeton 2007:5.5-4–5.5-6

Note: ac = acre(s); AST = aboveground storage tank; Ave = avenue; Blvd = boulevard; Dr = drive; EIR = environmental impact report; ft = feet; Hwy = highway; Ln = lane; LTS = less than significant; LTSWM = less than significant with mitigation; Rd = road; sf = square feet; PS = potentially significant; St = street; SU = significant and unavoidable impact; WTP = water treatment plant

COMPLIANCE WITH LORS

At the present state of analysis it is unclear whether the proposed project would comply with all applicable laws, ordinances, regulations, and standards (LORS) listed in **Cultural Resources Table 1**. Although impacts to as-yet-unidentified archaeological resources that qualify as historical or unique under CEQA could be mitigated to less-than-significant levels, as discussed in the analysis, there is an unresolved issue with regard to the Edison Plant. If it is determined that the Edison Plant is not a historical resource as defined by CEQA, then the proposed project would be in compliance with all applicable LORS related to cultural resources. If it is determined that the Edison Plant is a historical resource then compliance with LORS will be re-evaluated in the FSA.

NOTEWORTHY PUBLIC BENEFITS

The AFC does not identify any noteworthy public benefits concerning cultural resources (AES 2012a:1-13, 1-14). Although the proposed facility’s shorter stacks would create a less obtrusive profile, staff has not identified historical resources in the PAA that the proposed project would affect visually. Therefore, staff concludes that the proposed HBEP’s reduced height would not constitute a noteworthy public benefit in the area of cultural resources.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Staff has not received any comments on cultural resources from the public. Staff received a comment letter from one other agency where some mention is made of cultural resources. The NAHC indicated to staff that the NAHC’s Sacred Lands File does not contain record of Native American cultural resources in the project vicinity; prior to the Energy Commission’s consultation efforts, the applicant received a similar letter from the NAHC. The Juaneño Band of of Mission Indians Acjachemen Nation and Gabrielino-Tongva Tribe informed staff that they believe that tribal monitoring should be implemented during construction of the proposed project. (see “Native American Consultation”, earlier in this document.)

CONCLUSIONS

Staff concludes that the proposed project could result in a substantial adverse change to as-yet-unidentified archaeological resources that qualify as historical or unique archaeological resources under CEQA, which is a significant impact under that act. However, staff finds that implementation of Conditions of Certification **CUL-1** through **CUL-8** would reduce this impact to a less-than-significant level. Staff recommends that the Energy Commission adopt these cultural resources conditions of certification.

As stated earlier in this section of the PSA, the significance status of P-30-176946 (Edison Plant/HBGS) is uncertain. Because staff has not yet determined, in consultation with the city of Huntington Beach, whether P-30-176946 is a historical resource for the purposes of CEQA and what, if applicable, characteristics or associations qualify it as a historical resource, staff cannot presently assess impacts or propose mitigation measures relative to this resource. Staff will present its recommendations on these subjects in the FSA.

CUL-1 and **CUL-2** are administrative conditions that set out who the people are who will implement the balance of the conditions, what the qualifications and roles of those people will be, and the information that the project owner will supply to help them fulfill those roles. **CUL-3** requires the project owner to provide a specific plan (Cultural Resources Mitigation and Monitoring Plan, or CRMMP) to guide construction monitoring and the evaluation and treatment of inadvertently discovered archaeological resources or human remains, in light of what is known about regional prehistoric, ethnography, and history. **CUL-5** provides for training of project owner staff and the construction management/implementation team regarding basic cultural resource identification and compliance with these proposed conditions and the provisions of the CRMMP. **CUL-6** defines the scope of monitoring by qualified archaeologists and Native Americans, required to implement the CRMMP and other proposed conditions. **CUL-7** defines the protocols, responsibilities, and timeframes involved in responding to inadvertent archaeological or human remains discoveries. **CUL-8** describes the manner in which the project owner is to conduct cultural resources inventory and analysis in the event that procurement of construction materials must occur at off-site, non-commercial properties. **CUL-4** requires that the project owner prepare a final report of all cultural resources activities undertaken during construction of the proposed project.

PROPOSED CONDITIONS OF CERTIFICATION

CUL-1 Prior to the start of ground disturbance (as defined in the General Conditions section); post-certification cultural resources activities (including but not limited to “survey”, “in-field data recording,” “surface collection,” “testing,” “data recovery” or “geoarchaeology”); or surface grading or subsurface soil work during pre-construction activities or site mobilization; the project owner shall obtain the services of a Cultural Resources Specialist (CRS) and one or more alternate CRS. The project owner shall submit the resumes and qualifications for the CRS, CRS alternates, and all technical specialists to the CPM for review and approval.

The CRS shall manage all cultural resource monitoring, mitigation, curation, and reporting activities, and any post-certification cultural resource activities (as defined in the previous paragraph), unless management of these is otherwise provided for in accordance with the cultural resource conditions of certification (conditions). The CRS shall serve as the primary point of contact on all cultural resource matters for the Energy Commission. The CRS may elect to obtain the services of Cultural Resource Monitors (CRMs), Native American Monitors (NAMs), and other technical specialists, if needed, to assist in monitoring, mitigation, and curation activities. The project owner shall ensure that the CRS makes recommendations regarding the eligibility for listing in the California Register of Historical Resources (CRHR) of any cultural resources that are newly discovered or that may be affected in an unanticipated manner.

No construction-related ground disturbance or grading, boring, and trenching, as defined in the General Conditions for this project; post-certification cultural resource activities (as defined in the first paragraph of this condition); or surface grading or subsurface soil work during pre-construction activities or site mobilization, shall occur prior to CPM approval of the CRS and alternates, unless such activities are specifically approved by the CPM.

Approval of a CRS may be denied or revoked for reasons including, but not limited to, non-compliance on this or other Energy Commission projects and for concurrent service as CRS on an unmanageable number of Energy Commission projects, as determined by the CPM. After all ground disturbance is completed and the CRS has fulfilled all responsibilities specified in these cultural resources conditions, the project owner may discharge the CRS, after receiving approval from the CPM.

The staff-recommended conditions described in this subsection of the PSA shall continue to apply during operation of the proposed power plant.

CULTURAL RESOURCE SPECIALIST

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

1. Qualifications appropriate to the needs of the project, including a background in anthropology, archaeology, history, architectural history, or a related field;
2. At least 10 years of archaeological or historical experience (as appropriate for the project site), with resources mitigation and fieldwork;

3. At least one year of field experience in California; and
4. At least three years of experience in a decision-making capacity on cultural resources projects in California and the appropriate training and experience to knowledgably make recommendations regarding the significance of cultural resources. The resumes of the CRS and alternate CRS shall include the names and telephone numbers of contacts familiar with the work of the CRS/alternate CRS on referenced projects and demonstrate to the satisfaction of the CPM that the CRS/alternate CRS has the appropriate training and experience to implement effectively the Conditions.

CULTURAL RESOURCES MONITORS

CRMs shall have the following qualifications:

1. B.S. or B.A. degree in anthropology, archaeology, historical archaeology, or a related field; and one year of archaeological field experience in California; or
2. A.S. or A.A. degree in anthropology, archaeology, historical archaeology, or a related field, and four years of archaeological field experience in California; or
3. Enrollment in upper division classes pursuing a degree in the fields of anthropology, archaeology, historical archaeology, or a related field, and two years of archaeological field experience in California.

NATIVE AMERICAN MONITORS

The project owner shall ensure that the CRS obtains the services of qualified NAMs. Preference in selecting NAMs shall be given to Native Americans with:

1. traditional ties to the area to be monitored, and
2. the highest qualifications as described by the Native American Heritage Commission (NAHC) document entitled: *Guidelines for Monitors/Consultants Native American Cultural, Religious, and Burial Sites* (NAHC 2005).

CULTURAL RESOURCES TECHNICAL SPECIALISTS

The resume(s) of any additional technical specialist(s), e.g., geoarchaeologist, historical archaeologist, historian, architectural historian, and/or physical anthropologist, shall be submitted to the CPM for approval. The resume of each proposed specialist shall demonstrate that their training and background meet the U.S. Secretary of Interior’s Professional Qualifications Standards for their specialty (if appropriate), as published in Title 36, Code of Federal Regulations, part 61, and show the completion of appropriate graduate-level coursework. The resumes of specialists shall include the names and telephone numbers of contacts familiar with the work of these persons on projects referenced in the resumes and demonstrate to the satisfaction of the CPM that these persons have the appropriate training and experience to undertake the required research. The project owner may name and hire any specialist prior to certification. All specialists are under the supervision of the CRS.

Verification:

1. At least 45 days prior to the start of construction-related ground disturbance, the project owner shall submit the resume for the CRS and alternate CRS(s) (if proposed), to the CPM for review and approval.
2. At least 10 days prior to a termination or release of the CRS, or within 10 days after the resignation of a CRS, the project owner shall submit the resume of the proposed new CRS to the CPM for review and approval. If there is no alternate CRS in place to conduct the duties of the CRS, a previously approved CRM may serve in place of a CRS so that construction-related ground disturbance may continue up to a maximum of three days without a CRS. If cultural resources are discovered, construction-related ground disturbance will remain halted until there is a CRS or alternate CRS to make a recommendation regarding significance.
3. At least 20 days prior to construction-related ground disturbance, the CRS shall provide a letter naming anticipated CRMs, NAMs, and additional specialists, for the project. The letter shall state that the identified monitors and specialists meet the minimum qualifications for cultural resources monitoring and resource management required by this condition.
4. If efforts to obtain the services of a qualified NAM are unsuccessful, the project owner shall inform the CPM of this situation in writing at least 30 days prior to the beginning of post-certification cultural resources field work or construction-related ground disturbance.
5. At least 5 days prior to additional CRMs or NAMs beginning on-site duties during the project, the CRS shall review the qualifications of the proposed CRMs or NAMs and send approval letters to the CPM, identifying the monitors and attesting to their qualifications.
6. At least 10 days prior to any technical specialists beginning tasks, the resume(s) of the specialists shall be provided to the CPM for review and approval.
7. At least 10 days prior to the start of construction-related ground disturbance, the project owner shall confirm in writing to the CPM that the approved CRS will be available for onsite work and is prepared to implement the cultural resources conditions.

CUL-2 Prior to the start of construction-related ground disturbance or grading, boring, and trenching, as defined in the General Conditions for this project; or surface grading or subsurface soil work during pre-construction activities or site mobilization; if the CRS has not previously worked on the project, the project owner shall provide the CRS with copies of the AFC, data responses, confidential cultural resources reports, all supplements, the Energy Commission staff's cultural resources FSA, and the cultural resources conditions of certification from the Final Decision for the project. The project owner shall also provide the CRS and the CPM with maps and drawings showing the footprints of the power plant, all linear facility routes, all access roads, and all laydown areas. Maps shall include the appropriate USGS quadrangles and a map at an appropriate scale (e.g., 1:24,000 and 1 inch = 200 feet, respectively) for plotting cultural features or materials. If the CRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the CRS and CPM. The CPM shall review map submittals and, in consultation with the CRS, approve those that are appropriate for use in cultural resources planning activities. No ground disturbance shall occur prior to CPM approval of maps and drawings, unless such activities are specifically approved by the CPM.

Maps shall include any NRHP/CRHR-eligible historic built environment resources identified in the FSA.

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

Weekly, until ground disturbance is completed, the project construction manager shall provide to the CRS and CPM a schedule of project activities for the following week, including the identification of area(s) where ground disturbance will occur during that week.

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

The project owner shall provide the documents described in the first paragraph of this condition to new CRSs in the event that the approved CRS is terminated or resigns.

Verification:

1. At least 40 days prior to the start of ground disturbance, the project owner shall provide the CPM notice that the AFC, data responses, confidential cultural resources documents, all supplements, FSA, and Final Commission Decision have been provided to the CRS, if needed, and the subject maps and drawings to the CRS and CPM. The CPM will review submittals in consultation with the CRS and approve maps and drawings suitable for cultural resources planning activities.
2. At least 15 days prior to the start of ground disturbance, if there are changes to any project-related footprint, the project owner shall provide revised maps and drawings for the changes to the CRS and CPM.
3. At least 15 days prior to the start of each phase of a phased project, the project owner shall submit the appropriate maps and drawings, if not previously provided, to the CRS and CPM.
4. Weekly, during ground disturbance, a schedule of the next week's anticipated project activity shall be provided to the CRS and CPM by letter, e-mail, or fax.
5. Monthly, during ground disturbance, email progress report to the CPM, interested Native Americans and other interested parties.
6. Within 5 days of changing the scheduling of phases of a phased project, the project owner shall provide written notice of the changes to the CRS and CPM.

7. At least 10 days prior to a termination or release of the CRS, or within 10 days after the resignation of a CRS, the project owner shall provide the CPM notice that the AFC, data responses, confidential cultural resources documents, all supplements, FSA, Final Commission Decision, and maps and drawings have been provided to the new CRS.

CUL-3 Prior to the start of construction-related ground disturbance or grading, boring, and trenching, as defined in the General Conditions for this project; or surface grading or subsurface soil work during pre-construction activities or site mobilization; the project owner shall submit the Cultural Resources Mitigation and Monitoring Plan (CRMMP), as prepared by or under the direction of the CRS, to the CPM for review and approval. The CRMMP shall follow the content and organization of the draft model CRMMP, provided by the CPM, and the authors' name(s) shall appear on the title page of the CRMMP. The CRMMP shall identify measures to minimize potential impacts to sensitive cultural resources. Implementation of the CRMMP shall be the responsibility of the CRS and the project owner. Copies of the CRMMP shall reside with the CRS, alternate CRS, each CRM, and the project owner's on-site construction manager. No ground disturbance shall occur prior to CPM approval of the CRMMP, unless such activities are specifically approved by the CPM. The CRMMP shall be designated as a confidential document if the location(s) of cultural resources are described or mapped.

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

1. The following statement included in the Introduction: "Any discussion, summary, or paraphrasing of the conditions of certification in this CRMMP is intended as general guidance and as an aid to the user in understanding the conditions and their implementation. The conditions, as written in the Commission Decision, shall supersede any summarization, description, or interpretation of the conditions in the CRMMP. The Cultural Resources conditions of certification from the Commission Decision are contained in Appendix A."
2. A proposed general research design that includes a discussion of archaeological research questions and testable hypotheses specifically applicable to the project area, and a discussion of artifact collection, retention/disposal, and curation policies as related to the research questions formulated in the research design. The research design shall specify that the preferred treatment strategy for any buried archaeological deposits is avoidance. A specific mitigation plan shall be prepared for any unavoidable impacts to any CRHR-eligible (as determined by the CPM) resources. A prescriptive treatment plan may be included in the CRMMP for limited data types.
3. Specification of the implementation sequence and the estimated time frames needed to accomplish all project-related tasks during the ground-disturbance and post-ground–disturbance analysis phases of the project.

4. Identification of the person(s) expected to perform each of the tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation and monitoring team.
5. A description of the manner in which Native American observers or monitors will be included, the procedures to be used to select them, and their role and responsibilities.
6. A description of all impact-avoidance measures (such as flagging or fencing) to prohibit or otherwise restrict access to sensitive resource areas that are to be avoided during ground disturbance, construction, and/or operation, and identification of areas where these measures are to be implemented. The description shall address how these measures would be implemented prior to the start of ground disturbance and how long they would be needed to protect the resources from project-related effects.
7. A statement that all encountered cultural resources over 50 years old shall be recorded on DPR 523 forms and mapped and photographed. In addition, all archaeological materials retained as a result of the archaeological investigations (survey, testing, data recovery) shall be curated in accordance with the California State Historical Resources Commission's (SHRC) *Guidelines for the Curation of Archaeological Collections* (SHRC 1993), into a retrievable storage collection in a public repository or museum.
8. A statement that the project owner will pay all curation fees for artifacts recovered and for related documentation produced during cultural resources investigations conducted for the project. The project owner shall identify three possible curation facilities that could accept cultural resources materials resulting from project activities.
9. A statement demonstrating when and how the project owner will comply with Health and Human Safety Code, section 7050.5(b) and Public Resources Code, section 5097.98(b) and (e), including the statement that the project owner will notify the CPM and the NAHC of the discovery of human remains.
10. A statement that the CRS has access to equipment and supplies necessary for site mapping, photography, and recovery of any cultural resource materials that are encountered during ground disturbance and cannot be treated prescriptively.
11. A description of the contents, format, and review and approval process of the final cultural resources report (CRR), which shall be prepared according to *Archaeological Resource Management Report* (ARMR) guidelines.

Verification:

1. Upon approval of the CRS proposed by the project owner, the CPM will provide to the project owner an electronic copy of the draft model CRMMP for the CRS.

2. At least 30 days prior to the start of ground disturbance, the project owner shall submit the CRMMP to the CPM for review and approval.
3. At least 30 days prior to the start of ground disturbance, in a letter to the CPM, the project owner shall agree to pay curation fees for any materials generated or collected as a result of the archaeological investigations (survey, testing, and data recovery).
4. Within 90 days after completion of ground disturbance (including landscaping), if cultural materials requiring curation were generated or collected, the project owner shall provide to the CPM a copy of an agreement with, or other written commitment from a curation facility that meets the standards stated in SHRC (1993), to accept the cultural materials from this project. Any agreements concerning curation will be retained and available for audit for the life of the project.

CUL-4 The project owner shall submit the final cultural resources report (CRR) to the CPM for approval. The final CRR shall be written by, or under the direction of, the CRS and shall be provided in the ARMR format. The final CRR shall report on all field activities including dates, times and locations, results, samplings, and analyses. The final CRR shall be a confidential document if it describes or maps the location(s) of cultural resources. All survey reports, DPR 523 forms, data recovery reports, and any additional research reports not previously submitted to the California Historical Resources Information System (CHRIS) shall be included as appendices to the final CRR.

If the project owner requests a suspension of ground disturbance and/or construction activities, then a draft CRR that covers all cultural resources activities associated with the project shall be prepared by the CRS and submitted to the CPM for review and approval. The draft CRR shall be retained at the project site in a secure facility until ground disturbance and/or construction resumes or the project is withdrawn. If the project is withdrawn, then a final CRR shall be submitted to the CPM for review and approval.

Verification:

1. Within 30 days after requesting a suspension of construction activities, the project owner shall submit a draft CRR to the CPM for review and approval.
2. Within 90 days after completion of ground disturbance (including landscaping), the project owner shall submit the final CRR to the CPM for review and approval. If any reports have previously been sent to the CHRIS, then receipt letters from the CHRIS or other verification of receipt shall be included in an appendix.
3. Within 10 days after CPM approval of the CRR, the project owner shall provide documentation to the CPM confirming that copies of the final CRR have been provided to the SHPO, the CHRIS, the curating institution, if archaeological materials were collected, and to the tribal chairpersons of any Native American groups requesting copies of project-related reports.

CUL-5 Prior to and for the duration of construction-related ground disturbance or grading, boring, and trenching, as defined in the General Conditions for this project; or surface grading or subsurface soil work during pre-construction activities or site mobilization; the project owner shall provide Worker Environmental Awareness Program (WEAP) training to all new workers within their first week of employment at the project site, along the linear facilities routes, and at laydown areas, roads, and other ancillary areas. The cultural resources part of this training shall be prepared by the CRS, may be conducted by any member of the archaeological team, and may be presented in the form of a video. The CRS is encouraged to include a Native American presenter in the training to contribute the Native American perspective on archaeological and ethnographic resources. During the training and during construction, the CRS shall be available (by telephone or in person) to answer questions posed by employees. The training may be discontinued when ground disturbance is completed or suspended, but must be resumed when ground disturbance, such as landscaping, resumes.

The training shall include:

1. A discussion of applicable laws and penalties under law;
2. Samples or visuals of artifacts that might be found in the project vicinity;
3. A discussion of what such artifacts may look like when partially buried, or wholly buried and then freshly exposed;
4. A discussion of what prehistoric and historical archaeological deposits look like at the surface and when exposed during construction, and the range of variation in the appearance of such deposits;
5. Instruction that the CRS, alternate CRS, and CRMs have the authority to halt ground disturbance in the area of a discovery to an extent sufficient to ensure that the resource is protected from further impacts, as determined by the CRS;
6. Instruction that employees, if the CRS, alternate CRS, or CRMs are not present, are to halt work on their own in the vicinity of a potential cultural resources discovery, and shall contact their supervisor and the CRS or CRM, and that redirection of work would be determined by the construction supervisor and the CRS;
7. An informational brochure that identifies reporting procedures in the event of a discovery;
8. An acknowledgement form signed by each worker indicating that they have received the training; and
9. A sticker that shall be placed on hard hats indicating that environmental training has been completed.

No ground disturbance shall occur prior to implementation of the WEAP program, unless such activities are specifically approved by the CPM.

Verification:

1. At least 30 days prior to the beginning of ground disturbance, the CRS shall provide the cultural resources WEAP training program draft text and/or training video, including Native American participation, and graphics and the informational brochure to the CPM for review and approval.
2. At least 15 days prior to the beginning of ground disturbance, the CPM will provide to the project owner a WEAP Training Acknowledgement form for each WEAP-trained worker to sign.
3. Monthly, until ground disturbance is completed, the project owner shall provide in the Monthly Compliance Report (MCR) the WEAP Training Acknowledgement forms of workers who have completed the training in the prior month and a running total of all persons who have completed training to date.

CUL-6 Prior to the start of construction-related ground disturbance or grading, boring, and trenching, as defined in the General Conditions for this project; or surface grading or subsurface soil work during pre-construction activities or site mobilization; the project owner shall notify the CPM and all interested Native Americans of the date on which ground disturbance will ensue. The project owner shall ensure that the CRS, alternate CRS, or CRMs monitor full time all of the above specified ground disturbance at the project site, along the linear facilities routes, and at laydown areas, roads, and other ancillary areas, to ensure there are no impacts to undiscovered cultural resources and to ensure that known cultural resources are not affected in an unanticipated manner.

Full-time archaeological monitoring for this project shall be required during the ground-disturbing activities (as specified in the previous paragraph), for as long as the activities are ongoing. Where excavation equipment is actively removing dirt and hauling the excavated material farther than 50 feet from the location of active excavation, full-time archaeological monitoring shall require at least two monitors per excavation area. In this circumstance, one monitor shall observe the location of active excavation and a second monitor shall inspect the dumped material. For excavation areas where the excavated material is dumped no farther than 50 feet from the location of active excavation, one monitor shall both observe the location of active excavation and inspect the dumped material.

In the event that the CRS believes that the required number of monitors is not appropriate in certain locations, a letter or e-mail detailing the justification for changing the number of monitors shall be provided to the CPM for review and approval prior to any change in the number of monitors.

The project owner shall obtain the services of one or more NAMs to monitor construction-related ground disturbance in areas where Native American artifacts may be discovered. Contact lists of interested Native Americans and guidelines for monitoring shall be obtained from the NAHC. Preference in selecting an NAM shall be given to Native Americans with traditional ties to the area that shall be monitored. If efforts to obtain the services of a qualified NAM are unsuccessful, the project owner shall immediately inform the CPM. The CPM will either identify potential monitors or will allow construction-related ground disturbance to proceed without an NAM.

The research design in the CRMMP shall govern the collection, treatment, retention/disposal, and curation of any archaeological materials encountered. On forms provided by the CPM, CRMs shall keep a daily log of any monitoring and other cultural resources activities and any instances of non-compliance with the conditions and/or applicable LORS. The daily monitoring logs shall at a minimum include the following:

- First and last name of the CRM and any accompanying NAM.
- Time in and out.
- Weather. Specify if weather conditions led to work stoppages.
- Work location (project component). Provide specifics—.e.g., power block, landscaping.
- Proximity to site location. Specify if work conducted within 1000 feet of a known cultural resource.
- Work type (machine).
- Work crew (company, operator, foreman).
- Depth of excavation.
- Description of work.
- Stratigraphy.
- Artifacts, listed with the following identifying features:
    - Field artifact #: When recording artifacts in the daily monitoring logs, the CRS shall institute a field numbering system to reduce the likelihood of repeat artifact numbers. A typical numbering system could include a project abbreviation, monitor’s initials, and a set of numbers given to that monitor: e.g., HBEP-MB-123.
    - Description.
    - Measurements.
    - Universal Transverse Mercator coordinates.
- Whether artifacts are likely to be isolates or components of larger resources.
- Assessment of significance of any finds.
- Actions taken.
- Plan for the next work day.

A cover sheet shall be submitted with each day's monitoring logs, and shall at a minimum include the following:

- Count and list of first and last names of all CRMs and of all NAMs for that day.
- General description (in paragraph form) of that day's overall monitoring efforts, including monitor names and locations.
- Any reasons for halting work that day.
- Count and list of all artifacts found that day: include artifact #, location (i.e., grading in Unit X), measurements, UTMs, and very brief description (i.e., historic can, granitic biface, quartzite flake).
- Whether any artifacts were found out of context (i.e., in fill, caisson drilling, flood debris, spoils pile).

Copies of the daily monitoring logs and cover sheets shall be provided by email from the CRS to the CPM, as follows:

- Each day's monitoring logs and cover sheet shall be merged into one PDF document
- The PDF title and headings, and emails shall clearly indicate the date of the applicable monitoring logs.
- PDFs for any revised or resubmitted versions shall use the word "revised" in the title.

Daily and/or weekly maps shall be submitted along with the monitoring logs as follows:

- The CRS shall provide daily and/or weekly maps of artifacts at the request of the CPM. A map shall also be provided if artifact locations show complexity, high density, or other unique considerations.
- Maps shall include labeled artifacts, project boundaries, previously recorded sites and isolates, aerial imagery background, and appropriate scales.

From the daily monitoring logs, the CRS shall compile a monthly monitoring summary report to be included in the MCR. If there are no monitoring activities, the summary report shall specify why monitoring has been suspended.

- The Cultural Resources section of the MCR shall be prepared in coordination with the CRS, and shall include a monthly summary report of cultural resources-related monitoring. The summary shall:
    - List the number of CRMs and NAMs on a daily basis, as well as provide monthly monitoring-day totals.
    - Give an overview of cultural resource monitoring work for that month, and discuss any issues that arose.

    - Describe fulfillment of requirements of each cultural mitigation measure.
    - Summarize the confidential appendix to the MCR, without disclosing any specific confidential details.
    - Include the artifact concordance table (as discussed under the next bullet point), but with removal of UTMs.
- Each MCR, prepared under supervision of the CRS, shall be accompanied by a confidential appendix that contains completed DPR 523A forms for all artifacts recorded or collected in that month. For any artifact without a corresponding DPR form, the CRS shall specify why the DPR form is not applicable or pending (i.e. as part of a larger site update).
    - A concordance table that matches field artifact numbers with the artifact numbers used in the DPR forms shall be included. The sortable table shall contain each artifact's date of collection and UTM numbers, and note if an artifact has been deaccessioned or otherwise does not have a corresponding DPR form. Any post-field log recordation changes to artifact numbers shall also be noted.
    - DPR forms shall be submitted as one combined PDF.
        - The PDF shall organize DPR forms by site and/or artifact number.
        - The PDF shall include an index and bookmarks.
    - If artifacts from a given site location (in close proximity of each other or an existing site) are collected month after month, and if agreed upon with the CPM, a final updated DPR for the site may be submitted at the completion of monitoring. The monthly concordance table shall note that the DPR form for the included artifacts is pending.

The CRS or alternate CRS shall report daily to the CPM on the status of the project's cultural resources-related activities, unless reducing or ending daily reporting is requested by the CRS and approved by the CPM.

In the event that the CRS believes that the current level of monitoring is not appropriate in certain locations, a letter or e-mail detailing the justification for changing the level of monitoring shall be provided to the CPM for review and approval prior to any change in the level of monitoring.

The CRS, at his or her discretion, or at the request of the CPM, may informally discuss cultural resources monitoring and mitigation activities with Energy Commission technical staff.

Cultural resources monitoring activities are the responsibility of the CRS. Any interference with monitoring activities, removal of a monitor from duties assigned by the CRS, or direction to a monitor to relocate monitoring activities by anyone other than the CRS shall be considered non-compliance with these Conditions.

Upon becoming aware of any incidents of non-compliance with the Conditions and/or applicable LORS, the CRS and/or the project owner shall notify the CPM. The CRS shall also recommend corrective action to resolve the problem or achieve compliance with the Conditions. When the issue is resolved, the CRS shall write a report describing the issue, the resolution of the issue, and the effectiveness of the resolution measures. This report shall be provided in the next MCR for the review of the CPM.

Verification:

1. At least 30 days prior to the start of ground disturbance, the project owner will notify all Native Americans with whom Energy Commission staff communicated during the project review of the date on which the project's ground disturbance will begin.

2. At least 30 days prior to the start of ground disturbance, the CPM will provide to the CRS an electronic copy of a form to be used as a daily monitoring log and information to be included in the cover sheet for the daily monitoring logs

3. While monitoring is on-going, the project owner shall submit each day's monitoring logs and cover sheet merged into one PDF document by email within 24 hours.

4. The CRS and/or project owner shall notify the CPM of any incidents of non-compliance with the Conditions and/or applicable LORS by telephone or email within 24 hours

5. The CRS shall provide daily maps of artifacts along with the daily monitoring logs if more than 10 artifacts are found per day, or as requested by the CPM.

6. The CRS shall provide weekly maps of artifacts if there more than 50 artifacts are found per week, or as requested by the CPM. The map shall be submitted within two business days after the end of each week.

7. Within 15 days of receiving from a local Native American group a request that a NAM be employed, the project owner shall submit a copy of the request and a copy of a response letter to the group notifying them that a NAM has been employed and identifying the NAM.

8. While monitoring is on-going, the project owner shall submit monthly MCRs and accompanying weekly summary reports. The project owner shall attach any new DPR 523A forms, under confidential cover, completed for finds treated prescriptively, as specified in the CRMMP.

9. Final updated DPRs with sites (where artifacts are collected month after month) can be submitted at the completion of monitoring, as agreed upon with the CPM.

10. At least 24 hours prior to implementing a proposed change in monitoring level, the project owner shall submit to the CPM, for review and approval, a letter or e-mail (or

some other form of communication acceptable to the CPM) detailing the CRS's justification for changing the monitoring level.

11. At least 24 hours prior to reducing or ending daily reporting, the project owner shall submit to the CPM, for review and approval, a letter or e-mail (or some other form of communication acceptable to the CPM) detailing the CRS's justification for reducing or ending daily reporting.

12. Within 15 days of receiving them, the project owner shall submit to the CPM copies of any comments or information provided by Native Americans in response to the project owner's transmittals of information.

CUL-7 The project owner shall grant authority to halt ground disturbance to the CRS, alternate CRS, and the CRMs in the event of a discovery. Redirection of ground disturbance shall be accomplished under the direction of the construction supervisor in consultation with the CRS.

In the event that a cultural resource over 50 years of age is found (or if younger, determined exceptionally significant by the CPM), or impacts to such a resource can be anticipated, ground disturbance shall be halted or redirected in the immediate vicinity of the discovery sufficient to ensure that the resource is protected from further impacts. If the discovery includes human remains, the project owner shall comply with the requirements of Health and Human Safety Code, section 7050.5(b) and notify the CPM and the NAHC of the discovery of human remains. No action with respect to the disposition of human remains of Native American origin shall be initiated without direction from the CPM. Monitoring, including Native American monitoring, and daily reporting, as provided in other conditions, shall continue during the project's ground-disturbing activities on other areas of the project site, while the halting or redirection of ground disturbance in the vicinity of the discovery shall remain in effect until the CRS has visited the discovery, and all of the following have occurred:

1. The CRS has notified the project owner, and the CPM has been notified within 24 hours of the discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday, and provided a description of the discovery (or changes in character or attributes), the action taken (i.e., work stoppage or redirection), a recommendation of CRHR/NRHP eligibility, and recommendations for data recovery from any cultural resources discoveries, whether or not a determination of CRHR/NRHP eligibility has been made.
2. If the discovery would be of interest to Native Americans, the CRS has notified all Native American groups that expressed a desire to be notified in the event of such a discovery.
3. The CRS has completed field notes, measurements, and photography for a DPR 523 "Primary Record" form. Unless the find can be treated prescriptively, as specified in the CRMMP, the "Description" entry of the DPR 523 "Primary Record" form shall include a recommendation on the

CRHR/NRHP eligibility of the discovery. The project owner shall submit completed forms to the CPM.

4. The CRS, the project owner, and the CPM have conferred, and the CPM has concurred with the recommended eligibility of the discovery and approved the CRS's proposed data recovery, if any, including the curation of the artifacts, or other appropriate mitigation; and any necessary data recovery and mitigation have been completed.

   Ground disturbance may resume only with the approval of the CPM.

<u>Verification:</u>

1. At least 30 days prior to the start of ground disturbance, the project owner shall provide the CPM and CRS with a letter confirming that the CRS, alternate CRS, and CRMs have the authority to halt ground disturbance in the vicinity of a cultural resources discovery, and that the project owner shall ensure that the CRS notifies the CPM within 24 hours of a discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday.
2. Unless the discovery can be treated prescriptively, as specified in the CRMMP, completed DPR 523 forms for resources newly discovered during ground disturbance shall be submitted to the CPM for review and approval no later than 24 hours following the notification of the CPM, or 48 hours following the completion of data recordation/recovery, whichever the CRS decides is more appropriate for the subject cultural resource.
3. Within 48 hours of the discovery of a resource of interest to Native Americans, the project owner shall ensure that the CRS notifies all Native American groups that expressed a desire to be notified in the event of such a discovery, and the CRS must inform the CPM when the notifications are complete.
4. No later than 30 days following the discovery of any Native American cultural materials, the project owner shall submit to the CPM copies of the information transmittal letters sent to the chairpersons of the Native American tribes or groups who requested the information. Additionally, the project owner shall submit to the CPM copies of letters of transmittal for all subsequent responses to Native American requests for notification, consultation, and reports and records.
5. Within 15 days of receiving them, the project owner shall submit to the CPM copies of any comments or information provided by Native Americans in response to the project owner's transmittals of information.

CUL-8 If fill soils must be acquired from a non-commercial borrow site or disposed of to a non-commercial disposal site, unless less-than-five-year-old surveys of these sites for archaeological resources are provided to and approved by the CPM, the CRS shall survey the borrow or disposal site(s) for cultural resources and record on DPR 523 forms any that are identified. When the survey is completed, the CRS shall convey the results and recommendations for further action to the project owner and the CPM, who will determine what, if any, further action is required. If the CPM determines that significant archaeological resources that cannot be avoided are present at the borrow site, the project owner must either select another borrow or disposal site or implement **CUL-7** prior to any use of the site. The CRS shall report on the methods and results of these surveys in the final CRR.

Verification:

1. As soon as the project owner knows that a non-commercial borrow site and/or disposal site will be used, he/she shall notify the CRS and CPM and provide documentation of previous archaeological survey, if any, dating within the past five years, for CPM approval.

2. In the absence of documentation of recent archaeological survey, at least 30 days prior to any soil borrow or disposal activities on the non-commercial borrow and/or disposal sites, the CRS shall survey the site(s) for archaeological resources. The CRS shall notify the project owner and the CPM of the results of the cultural resources survey, with recommendations, if any, for further action.

CULTURAL RESOURCES ACRONYM GLOSSARY

ACC	air-cooled condenser
AFC	Application for Certification
ARMR	Archaeological Resource Management Report
asl	above sea level
B.P.	before present
CA	California [state]
CCGT	combined cycle gas turbine
CEQA	California Environmental Quality Act
CHRIS	California Historical Resources Information System
Conditions	conditions of certification
CRHR	California Register of Historical Resources
CRM	Cultural Resources Monitor
CRMMP	Cultural Resources Monitoring and Mitigation Plan
CRR	Cultural Resource Report
CRS	Cultural Resources Specialist
DPR 523	Department of Parks and Recreation cultural resources recordation form

EIR	Environmental impact report
° F	degrees Fahrenheit
FSA	Final Staff Assessment
GLO	General Land Office
HB	Huntington Beach
HBEP	Huntington Beach Energy Project
HBGS	Huntington Beach Generating Station
HRSG	heat recovery steam generator
LA	Los Angeles [County]
LAN	Los Angeles [County]
LORS	laws, ordinances, regulations, and standards
MCR	Monthly Compliance Report
MLD	Most Likely Descendent
NAHC	Native American Heritage Commission
NHPA	National Historic Preservation Act
NPS	National Park Service
NRHP	National Register of Historic Places
OCA	Orange County Archives
OCFCD	Orange County Flood Control District
OCHS	Orange County Historical Society
OCSD	Orange County Sanitation District
OHP	Office of Historic Preservation
OR	Orange [County]
ORA	Orange [County]
PAA	Project Area of Analysis

PSA	Preliminary Staff Assessment
SARP	Santa Ana River Mainstem Project
SCCIC	South Central Coastal Information Center
SCE	Southern California Edison
SCEC	Southern California Edison Company
SCR	selective catalytic reduction (unit)
SST	sea surface temperature
Staff	Energy Commission cultural resources technical staff
STG	steam turbine generator
USC	University of Southern California
USGS	U.S. Geological Survey
WEAP	Worker Environmental Awareness Program
WPLT	Western Pluvial Lake Tradition

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HAZARDOUS MATERIALS MANAGEMENT

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SUMMARY OF CONCLUSIONS

Staff's evaluation of the proposed Huntington Beach Energy Project (HBEP), along with staff's proposed mitigation measures, indicates that hazardous materials use at the site would not present a significant impact to the public. With adoption of the proposed conditions of certification, the proposed project will comply with all applicable laws, ordinances, regulations, and standards. In response to Health and Safety Code, section 25531 et seq., AES Southland Development, LLC (AES-SLD) (the applicant) would be required to develop a risk management plan. To ensure the adequacy of this plan, staff's proposed conditions of certification require that the risk management plan be submitted for concurrent review by the Huntington Beach Fire Department (HBFD) and Energy Commission staff. In addition, staff's proposed conditions of certification require that both the HBFD and staff review and approve the risk management plan prior to delivery of any hazardous materials to the HBEP project site. Other proposed conditions of certification address the issue of the transportation, storage, and use of aqueous ammonia and site security.

INTRODUCTION

The purpose of this hazardous materials management analysis is to determine if the proposed HBEP has the potential to cause significant impacts on the public as a result of the use, handling, storage, or transportation of hazardous materials at the proposed site. If significant adverse impacts on the public are identified, Energy Commission staff must also evaluate the potential for facility design alternatives and additional mitigation measures to reduce those impacts to the extent feasible.

This analysis does not address the potential exposure of workers to hazardous materials used at the proposed facility. Employers must inform employees of hazards associated with their work and provide them with special protective equipment and training to reduce the potential for health impacts associated with the handling of hazardous materials. The **Worker Safety and Fire Protection** section of this document describes applicable requirements for the protection of workers from these risks.

Aqueous ammonia (19 percent ammonia in aqueous solution) will be used to control oxides of nitrogen (NOx) emissions through selective catalytic reduction. The use of aqueous ammonia significantly reduces the risk that would otherwise be associated with the use of the more hazardous anhydrous form of ammonia. Use of the aqueous form eliminates the high internal energy associated with the anhydrous form, which is stored as a liquefied gas at high pressure. The high internal energy associated with the anhydrous form of ammonia can act as a driving force in an accidental release, which can rapidly introduce large quantities of the material to the ambient air and result in high down-wind concentrations. Spills associated with the aqueous form are much easier to contain than those associated with anhydrous ammonia, and emissions from such spills are limited by the slow mass transfer from the surface of the spilled material.

Other hazardous materials, such as mineral and lubricating oils, cleaning detergents, and welding gasses will be present at the proposed HBEP project. No acutely toxic hazardous materials will be used on site during construction, and none of these materials pose significant potential for off-site impacts as a result of the quantities on site, their relative toxicity, their physical state, and/or their environmental mobility. Handling of hazardous materials during construction would follow Best Management Practices (BMPs) to minimize environmental effects (HBEP 2012a, Sections 5.5.3 and 5.5.4).

Although no natural gas is stored, the project will also involve the handling of large amounts of natural gas. Natural gas poses some risk of both fire and explosion. The proposed HBEP would connect to an existing Southern California Gas Company (SoCalGas) high-pressure natural gas pipeline located onsite on the northwest side of the facility near Newland Road (HBEP 2012a, Section 5.5.6.2.6). The HBEP project would also require the transportation of aqueous ammonia to the facility. This document addresses all potential impacts associated with the use and handling of hazardous materials.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The following federal, state, and local laws and policies apply to the protection of public health and hazardous materials management. Staff's analysis examines the project's compliance with these requirements.

Hazardous Materials Management Table 1
Laws, Ordinances, Regulations, and Standards

Applicable Law	Description
Federal	
The Superfund Amendments and Reauthorization Act of 1986 (42 USC §9601 et seq.)	Contains the Emergency Planning and Community Right To Know Act (also known as SARA Title III).
The Clean Air Act (CAA) of 1990 (42 USC 7401 et seq. as amended)	Established a nationwide emergency planning and response program and imposed reporting requirements for businesses that store, handle, or produce significant quantities of extremely hazardous materials.
The CAA section on risk management plans (42 USC §112(r)	Requires states to implement a comprehensive system informing local agencies and the public when a significant quantity of such materials is stored or handled at a facility. The requirements of both SARA Title III and the CAA are reflected in the California Health and Safety Code, section 25531, et seq.
49 CFR 172.800	The U.S. Department of Transportation (DOT) requirement that suppliers of hazardous materials prepare and implement security plans.
49 CFR Part 1572, Subparts A and B	Requires suppliers of hazardous materials to ensure that all their hazardous materials drivers are in compliance with personnel background security checks.

Applicable Law	Description
The Clean Water Act (CWA) (40 CFR 112)	Aims to prevent the discharge or threat of discharge of oil into navigable waters or adjoining shorelines. Requires a written spill prevention, control, and countermeasures (SPCC) plan to be prepared for facilities that store oil that could leak into navigable waters.
Title 49, Code of Federal Regulations, Part 190	Outlines gas pipeline safety program procedures.
Title 49, Code of Federal Regulations, Part 191	Addresses transportation of natural and other gas by pipeline: annual reports, incident reports, and safety-related condition reports. Requires operators of pipeline systems to notify the DOT of any reportable incident by telephone and then submit a written report within 30 days.
Title 49, Code of Federal Regulations, Part 192	Addresses transportation of natural and other gas by pipeline and minimum federal safety standards, specifies minimum safety requirements for pipelines including material selection, design requirements, and corrosion protection. The safety requirements for pipeline construction vary according to the population density and land use that characterize the surrounding land. This part also contains regulations governing pipeline construction (which must be followed for Class 2 and Class 3 pipelines) and the requirements for preparing a pipeline integrity management program.
Federal Register (6 CFR Part 27) interim final rule	A regulation of the U.S. Department of Homeland Security that requires facilities that use or store certain hazardous materials to submit information to the department so that a vulnerability assessment can be conducted to determine what certain specified security measures shall be implemented.
State	
Title 8, California Code of Regulations, section 5189	Requires facility owners to develop and implement effective safety management plans that ensure that large quantities of hazardous materials are handled safely. While such requirements primarily provide for the protection of workers, they also indirectly improve public safety and are coordinated with the Risk Management Plan (RMP) process.
Title 8, California Code of Regulations, section 458 and sections 500 to 515	Sets forth requirements for the design, construction, and operation of vessels and equipment used to store and transfer ammonia. These sections generally codify the requirements of several industry codes, including the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, the American National Standards Institute (ANSI) K61.1 and the National Boiler and Pressure Vessel Inspection Code. These codes apply to anhydrous ammonia but are also used to design storage facilities for aqueous ammonia.
California Health and Safety Code, section 25531 to 25543.4	The California Accidental Release Program (CalARP) requires the preparation of a Risk Management Plan (RMP) and off-site consequence analysis (OCA) and submittal to the local Certified Unified Program Agency for approval.
California Health and Safety Code,	Requires that “No person shall discharge from any source whatsoever such quantities of air contaminants or other material which causes injury,

Applicable Law	Description
section 41700	detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property."
California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)	Prevents certain chemicals that cause cancer and reproductive toxicity from being discharged into sources of drinking water.
California Public Utilities Commission General Order 112-E and 58-A	Contains standards for gas piping construction and service.
Local (or locally enforced)	
City of Huntington Beach Municipal Code Section 17.58	Develop and implement safety management plans as required by CA H&SC Sections 25500-25520. Administered by the Huntington Beach Fire Department
Huntington Beach Fire Department City Specifications	Various Huntington Beach Fire Department City Specifications (numbered 401 through 434) may be found at: http://www.huntingtonbeachca.gov/government/departments/Fire/fire_prevention_code_enforcement/fire_dept_city_specifications.cfm
City of Huntington Beach Municipal Code, Chapter 17.56	City of Huntington Beach Fire Code: The City of Huntington Beach has adopted the California Fire Code and has adopted several ordinances which amend it. l
NFPA 56 (adopted 2012)	NFPA 56 is the Standard for Fire and Explosion Prevention During Cleaning and Purging of Flammable Gas Piping Systems.

The Huntington Beach Fire Department and OC HCA-EHD share responsibility for the Certified Unified Program Agency (CUPA) programs. The Huntington Beach Fire Department is responsible for administering HMBPs, Hazardous Materials Management Plans, and RMPs filed by businesses located within the city. In addition, the Huntington Beach Fire Department and OC HCA-EHD share responsibility for ensuring that businesses and industry store and use hazardous materials safely and in conformance with various regulatory codes. The OC HCA-EHD is responsible for all other CUPA programs including SPCC Plans. The Huntington Beach Fire Department performs inspections at established facilities to verify that hazardous materials are properly stored and handled and that the types and quantities of materials reported in a firm's HMBP are accurate.(HBEP 2012a, Sections 5.5.6.3) With regard to seismic safety issues, construction and design of buildings and vessels storing hazardous materials will meet the seismic requirements of CCR Title 24 and 2010 California Building Code (HBEP 2012a, Section 5.5.6.4).

SETTING

Several factors associated with the area in which a project is to be located affect the potential for an accidental release of a hazardous material that could cause public health impacts. These include:

local meteorology;

terrain characteristics; and,

location of population centers and sensitive receptors relative to the project.

METEOROLOGICAL CONDITIONS

Meteorological conditions, including wind speed, wind direction, and air temperature, affect both the extent to which accidentally released hazardous materials would be dispersed into the air and the direction in which they would be transported. This affects the potential magnitude and extent of public exposure to such materials, as well as their associated health risks. When wind speeds are low and the atmosphere stable, dispersion is severely reduced but can lead to increased localized public exposure.

Recorded wind speeds and directions are described in the **Air Quality** section (5.1) of the Application for Certification (AFC) (HBEP 2012a). Staff agrees with the applicant's proposed meteorological input assumptions for modeling of potential accidental hazardous material releases that would use the U.S. Environmental Protection Agency's *RMP Offsite Consequence Analysis Guidance* document which assumes environmental conditions of F stability (stagnated air, very little mixing), wind speed of 1.5 meters per second, and the maximum temperature recorded in the area in the last 3 years is appropriate for conducting the off-site consequence analysis (HBEP 2012a, Appendix 5.5A).

TERRAIN CHARACTERISTICS

The location of elevated terrain is often an important factor in assessing potential exposure. An emission plume resulting from an accidental release may impact high elevations before impacting lower elevations. The topography of the site is essentially flat (about 15 feet above sea level) with the Pacific Ocean lying to the south and west and lowlands to the north and east of the project site.

LOCATION OF EXPOSED POPULATIONS AND SENSITIVE RECEPTORS

The general population includes many sensitive subgroups that may be at greater risk from exposure to emitted pollutants. These sensitive subgroups include the very young, the elderly, and those with existing illnesses. In addition, the location of the population in the area surrounding a project site may have a major bearing on health risk. Sensitive receptors in the project vicinity are listed and shown in APPENDIX 5.9A (HBEP 2012a). The nearest sensitive receptor is a daycare facility located 0.3 mile east of the project site. The nearest school is the Edison High School, located approximately 0.5 mile to the northeast of the project site (HBEP 2012a, section 5.9.2). All sensitive receptors within six miles of the project site are depicted in figure 5.9A-RECEPTOR MAP – 3275661.1s, (HBEP 2012a, Appendix 5.9A). The nearest resident is approximately 250 feet west-northwest of the facility along Newland Street, and additional residences are located about 1200 feet from the site to the northwest and about 2600 feet from the site to the east, respectively (HBEP 2012a, Section 5.9.2 and Section 2.3, Figure 2.3-3).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

Staff reviewed and assessed the potential for the transportation, handling, and use of hazardous materials to impact the surrounding community. All chemicals and natural gas were evaluated. Staff's analysis addresses the potential impacts on all members of the population including the young, the elderly, and people with existing medical conditions that may make them more sensitive to the adverse effects of hazardous materials. In order to accomplish this goal, staff utilized the most current public health exposure levels (both acute and chronic) that are established to protect the public from the effects of an accidental chemical release.

In order to assess the potential for released hazardous materials to travel off site and affect the public, staff analyzed several aspects of the proposed use of these materials at the facility. Staff recognizes that some hazardous materials must be used at power plants. Therefore, staff conducted its analysis by examining the choice and amount of chemicals to be used, the manner in which the applicant will use the chemicals, the manner by which they will be transported to the facility and transferred to facility storage tanks, and the way the applicant plans to store the materials on site.

Staff reviewed the applicant's proposed engineering and administrative controls concerning hazardous materials usage. Engineering controls are the physical or mechanical systems, such as storage tanks or automatic shut-off valves, that can prevent the spill of hazardous material from occurring, or which can either limit the spill to a small amount or confine it to a small area. Administrative controls are the rules and procedures that workers at the facility must follow that will help to prevent accidents or to keep them small if they do occur. Both engineering and administrative controls can act as methods of prevention or as methods of response and minimization. In both cases, the goal is to prevent a spill from moving off site and causing harm to the public.

Staff reviewed and evaluated the applicant's proposed use of hazardous materials as described by the applicant (HBEP 2012a, Section 5.5). Staff's assessment followed the five steps listed below.

Step 1: Staff reviewed the chemicals and the amounts proposed for on-site use as listed in Tables 5.5-1 through 5.5-3 of the AFC and determined the need and appropriateness of their use.

Step 2: Those chemicals proposed for use in small amounts or whose physical state is such that there is virtually no chance that a spill would migrate off site and impact the public were removed from further assessment.

Step 3: Measures proposed by the applicant to prevent spills were reviewed and evaluated. These included engineering controls such as automatic shut-off valves and different-sized transfer-hose couplings and administrative controls such as worker training and safety management programs.

Step 4: Measures proposed by the applicant to respond to accidents were reviewed and evaluated. These measures also included engineering controls such as catchment basins and methods to keep vapors from spreading and administrative controls such as training emergency response crews.

Step 5: Staff analyzed the theoretical impacts on the public of a worst-case spill of hazardous materials, as reduced by the mitigation measures proposed by the applicant. When mitigation methods proposed by the applicant are sufficient, no further mitigation is recommended. If the proposed mitigation is not sufficient to reduce the potential for adverse impacts to an insignificant level, staff will propose additional prevention and response controls until the potential for causing harm to the public is reduced to an insignificant level. It is only at this point that staff can recommend that the facility be allowed to use hazardous materials.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Small Quantity Hazardous Materials

In conducting the analysis, staff determined in Steps 1 and 2 that some hazardous materials, although present at the proposed facility, pose a minimal potential for off-site impacts since they will be stored in a solid form or in smaller quantities, have low mobility, or have low levels of toxicity. These hazardous materials, which were eliminated from further consideration, are briefly discussed below.

During the construction phase of the project, the only hazardous materials proposed for use are paint, paint thinner, cleaners, solvents, sealants, gasoline, diesel fuel, motor oil, hydraulic fluid, lubricants, and welding flux. Any impact of spills or other releases of these materials will be limited to the site because of the small quantities involved, their infrequent use (and therefore reduced chances of release), and/or the temporary containment berms used by contractors. Petroleum hydrocarbon-based motor fuels, mineral oil, lube oil, and diesel fuel are all very low volatility and represent limited off-site hazards even in larger quantities.

During operations, hazardous chemicals such as cleaning agents, lube oil, mineral insulating oil, and other various chemicals (see **Hazardous Materials Appendix B** for a list of all chemicals proposed to be used and stored at HBEP) would be used and stored in relatively small amounts and represent limited off-site hazards because of their small quantities, low volatility, and/or low toxicity.

After removing from consideration those chemicals that pose no risk of off-site impact in Steps 1 and 2, staff continued with Steps 3, 4, and 5 to review the remaining hazardous materials, natural gas and aqueous ammonia. However, the project will be limited to using, storing, and transporting only those hazardous materials listed in **Appendix B** of the PSA as per staff’s proposed condition **HAZ-1**.

Large Quantity Hazardous Materials

Natural Gas

Natural gas poses a fire and/or possible explosion risk because of its flammability. Natural gas is composed of mostly methane, but also contains ethane, propane, nitrogen, butane, isobutene, and isopentane. It is colorless, odorless, tasteless, and lighter than air. Natural gas can cause asphyxiation when methane is 90% in concentration. Methane is flammable when mixed in air at concentrations of 5-14%, which is also the detonation range. Natural gas, therefore, poses a risk of fire and/or possible explosion if a release occurs under certain specific conditions. However, it should be noted that, due to its tendency to disperse rapidly (Lees 1998), natural gas is less likely to cause explosions than many other fuel gases such as propane or liquefied petroleum gas, but can explode under certain confined conditions (as demonstrated by the natural gas detonation in Belgium in July 2004).

While natural gas will be used in significant quantities, it will not be stored on site. It will be delivered by SoCalGas via the existing onsite gas pipeline that serves the currently operating Huntington Beach Generating Station (HBEP 2012a, Section 4.0). The pipeline and onsite metering station are, and would continue to be, owned and operated by SoCalGas.

The existing SoCalGas metering station will remain in service temporarily during HBEP construction for continued operation of existing Huntington Beach Generating Station Units 1 and 2. As part of HBEP construction, SoCalGas will construct a new onsite gas metering station to support the HBEP facility and will decommission/demolish the existing metering station (HBEP 2012a, Section 4.0). Construction of the new gas metering station is considered part of the overall HBEP and the potential environmental impacts associated with the construction of the new gas metering station are included as part of this analysis of construction impacts.

The risk of a fire and/or explosion on site can be reduced to insignificant levels through adherence to applicable codes and the development and implementation of effective safety management practices. The National Fire Protection Association (NFPA) code 85A requires both the use of double-block and bleed valves for gas shut off and automated combustion controls. These measures will significantly reduce the likelihood of an explosion in gas-fired equipment. Additionally, start-up procedures would require air purging of the gas turbines prior to start up, thereby precluding the presence of an explosive mixture. The safety management plan proposed by the applicant would address the handling and use of natural gas, and would significantly reduce the potential for equipment failure because of either improper maintenance or human error.

Staff concludes that existing LORS are sufficient to ensure minimal risks of pipeline failure. Additionally, the gas metering station that would be constructed for this project would be located entirely on-site, which greatly reduces the risks of impacts to the public from a rupture or failure.

On June 28, 2010, the United States Chemical Safety and Hazard Board (CSB) issued Urgent Recommendations to the United States Occupational Safety and Health Administration (OSHA), the NFPA, the American Society of Mechanical Engineers

(ASME), and major gas turbine manufacturers to make changes to their respective regulations, codes, and guidance to require the use of inherently safer alternatives to natural gas blows for the purposes of pipe cleaning. Recommendations were also made to the fifty states to enact legislation applicable to power plants that prohibits flammable gas blows for the purposes of pipe cleaning. In accordance with those recommendations, staff proposes Condition of Certification **HAZ-9** which prohibits the use of flammable gas blows for pipe cleaning at the facility either during construction or after the start of operations. All fuel gas pipe purging activities shall vent any gases to a safe location outdoors, away from workers and sources of ignition. Fuel gas pipe cleaning and purging shall adhere to the provisions of NFPA 56, the Standard for Fire and Explosion Prevention During Cleaning and Purging of Flammable Gas Piping Systems, with special emphasis on sections 4.3.1 (written procedures for pipe cleaning and purging) and 6.111 (prohibition on the use of flammable gas for cleaning or purging at any time).

Aqueous Ammonia

Aqueous ammonia will be used to control the emission of oxides of nitrogen (NO_X) from the combustion of natural gas at the HBEP. The accidental release of aqueous ammonia without proper mitigation can result in significant down-wind concentrations of ammonia gas. HBEP would have 19-percent aqueous ammonia solution in a 24,000-gallon horizontal above ground storage tank (HBEP 2012a, Section 5.5.3.2.2). Actual storage contents would be limited to 20,400 gallons or 85 percent of tank capacity. Based on staff's analysis described above, aqueous ammonia is the only hazardous material that may pose the risk of off-site impact. The use of aqueous ammonia can result in the formation and release of toxic gases in the event of a spill even without interaction with other chemicals. This is a result of its moderate vapor pressure and the large amounts of aqueous ammonia that will be used and stored on site. However, the use of aqueous ammonia poses far less risk than the use of the far more hazardous anhydrous ammonia (ammonia that is not diluted with water).

To assess the potential impacts associated with an accidental release of aqueous ammonia, staff uses four bench mark exposure levels of ammonia gas occurring offsite. These include:

1. the lowest concentration posing a risk of lethality, 2,000 parts per million (ppm);
2. the immediately dangerous to life and health level of 300 ppm;
3. the emergency response planning guideline level 2 of 150 ppm, which is also the RMP level 1 criterion used by US EPA and California; and
4. the level considered by the Energy Commission staff to be without serious adverse effects on the public for a one-time exposure of 75 ppm (considered by staff to be a level of significance).

If the potential exposure associated with a potential release exceeds 75 ppm at any public receptor, staff will assume that the potential release poses a risk of significant impact. However, staff will also assess the probability of occurrence of the release and/or the nature of the potentially exposed population in determining whether the likelihood and extent of potential exposure are sufficient to support a finding of potentially significant impact. A detailed discussion of the exposure criteria considered by staff, as well as their applicability to different populations and exposure-specific conditions, is provided in **Hazardous Materials Appendix A**.

Section 5.5.4.3 and APPENDIX 5.5A of the AFC (HBEP 2012a) described the modeling parameters that would be used for the worst-case accidental releases of aqueous ammonia in the applicant's off-site consequence analysis (OCA). Pursuant to the California Accidental Release Program (CalARP) regulations (federal risk management plan regulations do not apply to sources that store or use aqueous ammonia solutions below 20 percent), the OCA would be performed for the worst-case release scenario, which would involve the failure and complete discharge of the storage tank. Ammonia emissions from the potential release scenario would be calculated following methods provided in the RMP off-site consequence analysis guidance, US EPA, April 1999. Potential off-site ammonia concentrations would be estimated indicating the distance from the source release point to the benchmarks of ammonia concentration.

Staff received applicant's offsite consequence analysis indicating that potential worst-case plume concentrations of more than 75 ppm would not move beyond the site boundaries. Applicant's modeling was performed with the commonly-used SLAB plume modeling program (HBEP 2013ff).

Staff verified applicant's results using a different and more conservative EPA-approved plume modeling program, ALOHA. Staff obtained similar results indicating that given an adequately designed secondary containment structure which limits the exposed surface area of the captured release pool, plume concentrations of more than 75 ppm would not occur off-site, even for the extremely unlikely worst-case scenario.

Staff's proposed Condition of Certification **HAZ-4** ensures that the aqueous ammonia secondary containment structure includes essential design elements to prevent a worst-case spill from producing significant off-site impacts.

Furthermore, the potential for accidents resulting in the release of hazardous materials is greatly reduced through implementation of a safety management program that would include the use of both engineering and administrative controls. Elements of both facility controls and the safety management plan are summarized below.

Engineering Controls

Engineering controls help to prevent accidents and releases (spills) from moving off site and affecting communities by incorporating engineering safety design criteria in the design of the project. The engineered safety features proposed by the applicant for use at the HBEP project include:

construction of secondary containment areas surrounding each of the hazardous materials storage areas designed to contain accidental releases that might happen during storage or delivery;

physical separation of stored chemicals in isolated containment areas with a non-combustible partition in order to prevent accidental mixing of incompatible materials, which could result in the evolution and release of toxic gases or fumes;

installation of a fire protection system for hazardous materials storage areas;

construction of bermed containment areas surrounding the aqueous ammonia storage tank capable of holding the entire tank volume plus the water associated with a 24-hour period of a 25-year storm;

construction of a sloped ammonia unloading pad that drains into the storage tank's secondary containment structure; and,

process protective systems including continuous tank level monitors, automated leak detectors, temperature and pressure monitors, alarms, and emergency block valves.

Administrative Controls

Administrative controls also help prevent accidents and releases (spills) from moving off site and affecting neighboring communities by establishing worker training programs, process safety management programs, and complying with all applicable health and safety laws, ordinances, and standards.

A worker health and safety program will be prepared by the applicant and include (but not be limited to) the following elements (see the **Worker Safety and Fire Protection** section for specific regulatory requirements):

worker training regarding chemical hazards, health and safety issues, and hazard communication;

procedures to ensure the proper use of personal protective equipment;

safety operating procedures for the operation and maintenance of systems utilizing hazardous materials;

fire safety and prevention; and,

emergency response actions including facility evacuation, hazardous material spill clean-up, and fire prevention.

At the facility, the project owner will be required to designate an individual with the responsibility and authority to ensure a safe and healthful work place. The project health and safety official will oversee the health and safety program and have the authority to halt any action or modify any work practice to protect the workers, facility, and the surrounding community in the event of a violation of the health and safety program.

The applicant will also prepare a risk management plan for aqueous ammonia, as required by both CalARP regulations and Condition of Certification **HAZ-2**. This condition also includes the requirement for a program for the prevention of accidental releases and responses to an accidental release of aqueous ammonia. A hazardous materials business plan will also be prepared by the applicant that would incorporate state requirements for the handling of hazardous materials (HBEP 2012a, Section 5.5.3.2.2). Other administrative controls would be required in proposed Conditions of Certification **HAZ-1** (limitations on the use and storage of hazardous materials and their strength and volume) and **HAZ-3** (development of a safety management plan). Condition of Certification **HAZ-4** requires that the final design drawings for the aqueous ammonia storage (and secondary containment) facility be submitted to the CPM for review and approval.

On-Site Spill Response

In order to address the issue of spill response, the facility will prepare and implement an emergency response plan that includes information on hazardous materials contingency and emergency response procedures, spill containment and prevention systems, personnel training, spill notification, on-site spill containment, and prevention equipment and capabilities, as well as other elements. Emergency procedures will be established which include evacuation, spill cleanup, hazard prevention, and emergency response.

The first responders to a hazardous materials incident at HBEP would be from Station #4 of the Huntington Beach Fire Department (HBFD). If needed, a full hazardous materials response would be provided by the HBFD Hazardous Materials Response Team (HBFD-HMRT) located at HBFD Station #6, 18591 Edwards Street, Huntington Beach, CA, approximate 4 miles away. The HBFD-HMRT is capable of handling any hazardous materials-related incident at the proposed facility and would have a response time of 15-to-20 minutes (HBEP 2012a, section 5.5.5.2.1). Staff finds that the HBFD and HBFD-HMRT teams are capable of responding to a hazardous materials emergency call from HBEP.

Transportation of Hazardous Materials

Hazardous materials including aqueous ammonia will be transported to the facility by tanker truck. While many types of hazardous materials will be transported to the site, staff believes that transport of aqueous ammonia poses the predominant risk associated with hazardous materials transport.

Staff reviewed the applicant’s proposed transportation route for hazardous materials delivery. Trucks would travel on I-405 to Beach Boulevard (State Highway 39), south onto Pacific Coast Highway (State Highway 1) and left onto Newland Street, then right into the HBEP site (HBEP 2012a, Section 5.5.3.3).

Ammonia can be released during a transportation accident and the extent of impact in the event of such a release would depend upon the location of the accident and the rate of dispersion of ammonia vapor from the surface of the aqueous ammonia pool. The likelihood of an accidental release during transport is dependent upon three factors:

- the skill of the tanker truck driver;
- the type of vehicle used for transport; and,
- accident rates.

To address this concern, staff evaluated the risk of an accidental transportation release in the project area. Staff’s analysis focused on the project area after the delivery vehicle leaves the main highway (I-405). Staff believes it is appropriate to rely upon the extensive regulatory program that applies to the shipment of hazardous materials on California highways to ensure safe handling in general transportation (see Federal Hazardous Materials Transportation Law 49 USC §5101 et seq, DOT regulations 49 CFR subpart H, §172–700, and California Department of Motor Vehicles (DMV) regulations on hazardous cargo). These regulations also address the issue of driver competence. See AFC section 5.5 for additional information on regulations governing the transport of hazardous materials.

To address the issue of tanker truck safety, aqueous ammonia will be delivered to the proposed facility in DOT-certified vehicles with design capacities of 6,500 gallons. These vehicles will be designed to DOT Code MC-307. These are high-integrity vehicles designed to haul caustic materials such as ammonia. Staff has, therefore, proposed Condition of Certification **HAZ-5** to ensure that, regardless of which vendor supplies the aqueous ammonia, delivery will be made in a tanker that meets or exceeds the specifications prescribed by these regulations.

To address the issue of accident rates, staff reviewed the technical and scientific literature on hazardous materials transportation (including tanker trucks) accident rates in the United States and California. Staff relied on six references and three federal government databases to assess the risk of a hazardous materials transportation accident.

Staff used the data from the Davies and Lees (1992) article, which references both the 1990 Harwood et al. and 1993 Harwood studies, to determine that the frequency of release for the transportation of hazardous materials in the U.S. is between 0.06 and 0.19 releases per 1,000,000 miles traveled on well-designed roads and highways. The applicant estimated that routine operation of the proposed HBEP would require 10 to 12 ammonia deliveries per month, each delivering about 6,500 gallons (HBEP 2012a, Section 5.5.3.2.2). Each delivery will travel approximately 6.5 miles from I-405 along Beach Boulevard and about 0.5 miles along the Pacific Coast Highway to the facility.

This would result in a maximum of 78 (= 6.5 x 12) miles of delivery tanker truck travel in the project area per month during peak operation (with a full load) and an average of approximately 860 miles of delivery tanker truck travel per year (assuming eleven deliveries per month). Staff believes that the risk over this distance is insignificant. Data from the U.S. DOT show that the actual risk of a fatality over the past five years from all modes of hazardous material transportation (rail, air, boat, and truck) is approximately 0.1 in 1,000,000.

In addition, staff used a transportation risk assessment model (developed by staff) in order to calculate the probability of an accident resulting in a release of a hazardous material due to delivery from the freeway to the facility via Beach Boulevard and the Pacific Coast Highway. Results show a risk about 1 in 1,000,000 for one trip from I-405 and a total annual risk of about 1 in 10,000 for 132 deliveries over a year. This risk was calculated using accident rates on various types of roads (in this case, urban multilane undivided, multilane divided, and two-lane) with distances traveled on each type of road computed separately. Although it is an extremely conservative model in that it includes risk of accidental release from all modes of hazardous materials transportation and does not distinguish between a high-integrity steel tanker truck and other less secure modes, the results still show that the risk of a transportation accident is insignificant.

Staff therefore believes that the risk of exposure to significant concentrations of aqueous ammonia during transportation to the facility is insignificant because of the remote possibility that an accidental release of a sufficient quantity could be dangerous to the public. The transportation of similar volumes of hazardous materials on the nation's highways is neither unique nor infrequent. Staff's analysis of the transportation of aqueous ammonia to the proposed facility (along with data from the U.S. DOT) demonstrates that the risk of accident and exposure is less than significant.

In order to further ensure that the risk of an accident involving the transport of aqueous ammonia to the power plant is insignificant, staff proposed Condition of Certification **HAZ-6** would require the use of only the specified and California Highway Patrol-approved route to the site.

Based on the environmental mobility, toxicity, the quantities at the site, and frequency of delivery, it is staff's opinion that aqueous ammonia poses the predominate risk associated with both use and hazardous materials transportation. Staff concludes that the risk associated with the transportation of other hazardous materials to the proposed project does not significantly increase the risk of ammonia transportation.

Seismic Issues

It is possible that an earthquake could cause the failure of a hazardous materials storage tank. An earthquake could also cause failure of the secondary containment system (berms and dikes), as well as the failure of electrically controlled valves and pumps. The failure of all of these preventive control measures might then result in a vapor cloud of hazardous materials that could move off site and affect residents and workers in the surrounding community. The effects of the Loma Prieta earthquake of 1989, the Northridge earthquake of 1994, and the earthquake in Kobe, Japan, in January 1995, have all heightened concerns about earthquake safety.

Information obtained after the January 1994 Northridge earthquake showed that some damage was caused both to several large storage tanks and to smaller tanks associated with the water treatment system of a cogeneration facility. The tanks with the greatest damage, including seam leakage, were older tanks, while the newer tanks sustained displacements and failures of attached lines. Staff reviewed the impacts of the February 2001 Nisqually earthquake near Olympia, Washington, a state with similar seismic design codes as California. No hazardous materials storage tanks failed as a result of that earthquake. Staff also conducted an analysis of the codes and standards which should be followed when designing and building storage tanks and containment areas to withstand a large earthquake. Referring to the sections on **Geologic Hazards and Resources** and **Facility Safety Design** in the AFC, staff notes that the proposed facility will be designed and constructed to the standards (including seismic) of the 2010 California Building Code. Therefore, on the basis of what occurred in Northridge with older tanks and the lack of failures during the Nisqually earthquake (with newer tanks), staff determined that tank failures during seismic events are not probable and do not represent a significant risk to the public.

Site Security

The applicant proposes to use hazardous materials identified by the U.S. EPA as requiring the development and implementation of special site security measures to prevent unauthorized access. The U.S. EPA published a Chemical Accident Prevention Alert regarding site security (EPA 2000a), the U.S. Department of Justice published a special report entitled *Chemical Facility Vulnerability Assessment Methodology* (US DOJ 2002), the North American Electric Reliability Council published *Security*

Guidelines for the Electricity Sector in 2002 (NERC 2002), and the U.S. Department of Energy (DOE) published the draft *Vulnerability Assessment Methodology for Electric Power Infrastructure* in 2002 (DOE 2002). The energy generation sector is one of 14 areas of critical infrastructure listed by the U.S. Department of Homeland Security. On April 9, 2007, the U.S Department of Homeland Security published in the Federal Register (6 CFR Part 27) an interim final rule requiring that facilities that use or store certain hazardous materials conduct vulnerability assessments and implement certain specified security measures. This rule was implemented with the publication of Appendix A, the list of chemicals, on November 2, 2007. While the rule applies to aqueous ammonia solutions of 20% or greater and this proposed facility plans to utilize a 19% aqueous ammonia solution, staff still believes that all power plants under the jurisdiction of the Energy Commission should implement a minimum level of security consistent with the guidelines listed here.

The applicant has stated that a security plan will be prepared for the proposed facility and will include a description of perimeter security measures and procedures for evacuating, notifying authorities of a security breach, monitoring fire alarms, conducting site personnel background checks, site access, and a security plan and background checks for hazardous materials drivers. Perimeter security measures utilized for this facility may include security guards, security alarms, breach detectors, motion detectors, and video or camera systems (HBEP 2012a, Section 5.5.5.2.5).

In order to ensure that neither this project nor a shipment of hazardous material is the target of unauthorized access, staff's proposed Conditions of Certification **HAZ-7** and **HAZ-8** address both construction security and operation security plans. These plans would require implementation of site security measures consistent with the above-referenced documents.

The goal of these conditions of certification is to provide for the minimum level of security for power plants necessary for the protection of California's electrical infrastructure from malicious mischief, vandalism, or domestic/foreign terrorist attacks. The level of security needed for the HBEP project is dependent upon the threat imposed, the likelihood of an adversarial attack, the likelihood of success in causing a catastrophic event, and the severity of the consequences of that event. The results of the off-site consequence analysis prepared as part of the RMP will be used, in part, to determine the severity of consequences of a catastrophic event.

In order to determine the level of security, the Energy Commission staff used an internal vulnerability assessment decision matrix modeled after the U.S. Department of Justice Chemical Vulnerability Assessment Methodology (July 2002), the North American Electric Reliability Council's (NERC) 2002 guidelines, the U.S. DOE VAM-CF model, and the U.S. Department of Homeland Security regulations published in the Federal Register (Interim Final Rule 6 CFR Part 27). Staff determined that this project would fall into the category of medium vulnerability due to the urban setting and close proximity to sensitive receptors. Staff therefore proposes that certain security measures be implemented but does not propose that the project owner conduct its own vulnerability assessment.

These security measures include perimeter fencing and breach detectors, alarms, site access procedures for employees and vendors, site personnel background checks, and law enforcement contacts in the event of a security breach. The perimeter fencing should include slats or other methods to reduce and restrict the visibility of the site from off-site locations. Site access for vendors shall be strictly controlled. Consistent with current state and federal regulations governing the transport of hazardous materials, hazardous materials vendors will have to maintain their transport vehicle fleet and employ only properly licensed and trained drivers. The project owner will be required, through the use of contractual language with vendors, to ensure that vendors supplying hazardous materials strictly adhere to the U.S. DOT requirements for hazardous materials vendors to prepare and implement security plans (as per 49 CFR 172.800) and to ensure that all hazardous materials drivers are in compliance through personnel background security checks (as per 49 CFR Part 1572, Subparts A and B). The compliance project manager (CPM) may authorize modifications to these measures or may require additional measures in response to additional guidance provided by the U.S. Department of Homeland Security, the U.S. DOE, or the NERC, after consultation with both appropriate law enforcement agencies and the applicant.

CUMULATIVE IMPACTS AND MITIGATION

Staff analyzed the potential for the existence of cumulative impacts. A significant cumulative hazardous materials impact is defined as the simultaneous uncontrolled release of hazardous materials from multiple locations in a form (gas or liquid) that could cause a significant impact where the release of one hazardous material alone would not cause a significant impact. Existing locations that use or store gaseous or liquid hazardous materials, or locations where such facilities might likely be built, were both considered. Staff believes that while cumulative impacts are theoretically possible, they are not probable because of the many safeguards implemented to both prevent and control an uncontrolled release. The chances of one uncontrolled release occurring are remote. The chance of two or more occurring simultaneously, with resulting airborne plumes mingling to create a significant impact, are even more remote. Staff believes the risk to the public is insignificant.

The applicant will develop and implement a hazardous materials handling program for HBEP independent of any other projects considered for potential cumulative impacts. Staff believes that the facility, as proposed by the applicant and with the additional mitigation measures proposed by staff, poses a minimal risk of accidental release that could result in off-site impacts. It is unlikely that an accidental release that has very low probability of occurrence (about one in one million per year) would independently occur at the HBEP site and another facility at the same time. Therefore, staff concludes that the facility would not contribute to a significant hazardous materials-related cumulative impact.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Comment: The city of Huntington Beach provided comments from the Huntington Beach Fire Department in the form of a Code Requirements letter regarding standard codes on fire safety and hazardous materials management, which identified specific City of Huntington Beach Municipal and Fire codes and specifications which would apply to the proposed project (CHB 2012a).

Response: Staff agrees and notes that the project would be built to comply with all local laws, ordinances, regulations, and standards (LORS). Notations to the local LORS have been added to the LORS table (Hazardous Materials Management Table 1) in this staff assessment.

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Staff concludes that construction and operation of the HBEP project would be in compliance with all applicable laws, ordinances, regulations, and standards (LORS) regarding long-term and short-term project impacts in the area of hazardous materials management.

CONCLUSIONS

Staff's evaluation of the proposed project (with proposed mitigation measures) indicates that hazardous material use will pose no significant impact to the public. Staff's analysis also shows that there will be no significant cumulative impact. With adoption of the proposed conditions of certification, the proposed project will comply with all applicable LORS. In response to Health and Safety Code, section 25531 et seq., the applicant will be required to develop a Risk Management Plan (RMP). To ensure the adequacy of the RMP, staff's proposed conditions of certification require that the RMP be submitted for concurrent review by the Huntington Beach Fire Department and by Energy Commission staff. In addition, staff's proposed conditions of certification require the review and approval of the RMP by staff prior to the delivery of any hazardous materials to the facility. Other proposed conditions of certification address the issue of the transportation, storage, and use of aqueous ammonia, in addition to site security matters.

Staff recommends that the Energy Commission impose the proposed conditions of certification, presented herein, to ensure that the project is designed, constructed, and operated to comply with all applicable LORS and to protect the public from significant risk of exposure to an accidental ammonia release. If all mitigation proposed by the applicant and staff are required and implemented, the use, storage, and transportation of hazardous materials will not present a significant risk to the public.

Staff proposes nine conditions of certification mentioned throughout the text (above), and listed below. Condition of Certification **HAZ-1** ensures that no hazardous material would be used at the facility except as listed in **Appendix B** of the staff assessment, unless there is prior approval by the Energy Commission compliance project manager.

Condition of Certification **HAZ-2** requires that an RMP be prepared and submitted prior to the delivery of aqueous ammonia.

Staff believes that an accidental release of aqueous ammonia during transfer from the delivery tanker to the storage tank is the most probable accident scenario and therefore proposes Condition of Certification (**HAZ-3**) requiring the development of a safety management plan for the delivery of all liquid hazardous materials, including aqueous ammonia. The development of a safety management plan addressing the delivery of all liquid hazardous materials during construction, commissioning, and operations will further reduce the risk of any accidental release not addressed by the proposed spill-prevention mitigation measures and the required RMP. This plan would additionally prevent the mixing of incompatible materials that could result in toxic vapors. Condition of Certification **HAZ-4** requires that the aqueous ammonia storage tank be designed to *high integrity* specifications. The transportation of hazardous materials is addressed in Conditions of Certification **HAZ-5** and **HAZ-6**. Site security during both the construction and operations phases is addressed in Conditions of Certification **HAZ-7** and **HAZ-8.** Condition of Certification **HAZ-9** addresses the use of natural gas and prohibits its use to clear pipes.

PROPOSED CONDITIONS OF CERTIFICATION

HAZ-1 The project owner shall not use any hazardous materials not listed in Appendix B, below, or in greater quantities or strengths than those identified by chemical name in Appendix B, below, unless approved in advance by the Compliance Project Manager (CPM).

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

HAZ-2 The project owner shall concurrently provide a Business Plan and a Risk Management Plan (RMP) prepared pursuant to the California Accidental Release Program (CalARP) to the Huntington Beach Fire Department and the CPM for review. After receiving comments from the Huntington Beach Fire Department and the CPM, the project owner shall reflect all recommendations in the final documents. Copies of the final Business Plan and RMP shall then be provided to the Huntington Beach Fire Department for information and to the CPM for approval.

Verification: At least thirty (30) days prior to receiving any hazardous material on the site for commissioning or operations, the project owner shall provide a copy of a final Business Plan to the CPM for approval.

At least thirty (30) days prior to delivery of aqueous ammonia to the site, the project owner shall provide the final RMP to the Certified Unified Program Agency (the Huntington Beach Fire Department) for information and to the CPM for approval.

HAZ-3 The project owner shall develop and implement a Safety Management Plan for delivery of aqueous ammonia and other liquid hazardous materials by tanker truck. The plan shall include procedures, protective equipment requirements, training, and a checklist. It shall also include a section describing all measures to be implemented to prevent mixing of incompatible hazardous materials including provisions to maintain lockout control by a power plant employee not involved in the delivery or transfer operation. This plan shall be applicable during construction, commissioning, and operation of the power plant.

Verification: At least thirty (30) days prior to the delivery of any liquid hazardous material to the facility, the project owner shall provide a Safety Management Plan as described above to the CPM for review and approval.

HAZ-4 The aqueous ammonia storage facility shall be designed to either the ASME Pressure Vessel Code and ANSI K61.6 or to API 620. In either case, the storage tank shall be protected by a secondary containment basin capable of holding 125% of the storage volume or the storage volume plus the volume associated with 24 hours of rain assuming the 25-year storm. The containment basis shall incorporate a vented cover that allows free flow of any aqueous ammonia release into the containment, yet limits the total vent area to not more than 16 square ft. The final design drawings and specifications for the ammonia storage tank and secondary containment basins shall be submitted to the CPM.

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

HAZ-5 The project owner shall direct all vendors delivering aqueous ammonia to the site to use only tanker truck transport vehicles which meet or exceed the specifications of DOT Code MC-307.

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

HAZ-6 The project owner shall direct all vendors delivering any hazardous material to the site to use only the route approved by the CPM (I-405 to Beach Boulevard (State Highway 39), south onto Pacific Coast Highway (State Highway 1), and left onto Newland Street, then right into the HBEP site). The project owner shall obtain approval of the CPM if an alternate route is desired.

Verification: At least sixty (60) days prior to receipt of any hazardous materials on site, the project owner shall submit copies of the required transportation route limitation direction to the CPM for review and approval.

HAZ-7 Prior to commencing construction, a site-specific Construction Site Security Plan for the construction phase shall be prepared and made available to the CPM for review and approval. The Construction Security Plan shall include the following:

1. perimeter security consisting of fencing enclosing the construction area;
2. security guards;

3. site access control consisting of a check-in procedure or tag system for construction personnel and visitors;
4. written standard procedures for employees, contractors and vendors when encountering suspicious objects or packages on site or off site;
5. protocol for contacting law enforcement and the CPM in the event of suspicious activity or emergency; and,
6. evacuation procedures.

Verification: At least thirty (30) days prior to commencing construction, the project owner shall notify the CPM that a site-specific Construction Security Plan is available for review and approval.

HAZ-8 The project owner shall also prepare a site-specific security plan for the commissioning and operational phases that will be available to the CPM for review and approval. The project owner shall implement site security measures that address physical site security and hazardous materials storage. The level of security to be implemented shall not be less than that described below (as per NERC 2002).

The Operation Security Plan shall include the following:

1. permanent full perimeter fence or wall, at least eight feet high and topped with barbed wire or the equivalent (and with slats or other methods to restrict visibility if a fence is selected;
2. main entrance security gate, either hand operated or motorized;
3. evacuation procedures;
4. protocol for contacting law enforcement and the CPM in the event of suspicious activity or emergency;
5. written standard procedures for employees, contractors, and vendors when encountering suspicious objects or packages on site or off site;
   A. a statement (refer to sample, **Attachment A**), signed by the project owner certifying that background investigations have been conducted on all project personnel. Background investigations shall be restricted to determine the accuracy of employee identity and employment history and shall be conducted in accordance with state and federal laws regarding security and privacy;
   B. a statement(s) (refer to sample, **Attachment B**), signed by the contractor or authorized representative(s) for any permanent contractors or other technical contractors (as determined by the CPM after consultation with the project owner), that are present at any time on the site to repair, maintain, investigate, or conduct any other technical duties involving critical components (as determined by the CPM after consultation with the project owner) certifying that background investigations have been conducted on contractors who visit the project site;

6. site access controls for employees, contractors, vendors, and visitors;
7. a statement(s) (refer to sample, **Attachment C**), signed by the owners or authorized representative of hazardous materials transport vendors, certifying that they have prepared and implemented security plans in compliance with 49 CFR 172.880, and that they have conducted employee background investigations in accordance with 49 CFR Part 1572, subparts A and B;
8. closed circuit TV (CCTV) monitoring system, recordable, and viewable in the power plant control room and security station (if separate from the control room) with cameras able to pan, tilt, and zoom, have low-light capability, and are able to view 100% of the perimeter fence, the ammonia storage tank, the outside entrance to the control room, and the front gate; and,
9. additional measures to ensure adequate perimeter security consisting of either:
   A. security guard(s) present 24 hours per day, 7 days per week; **<u>or</u>**
   B. power plant personnel on site 24 hours per day, 7 days per week, and perimeter breach detectors **<u>or</u>** on-site motion detectors.

The project owner shall fully implement the security plans and obtain CPM approval of any substantive modifications to those security plans. The CPM may authorize modifications to these measures, or may require additional measures such as protective barriers for critical power plant components— transformers, gas lines, and compressors—depending upon circumstances unique to the facility or in response to industry-related standards, security concerns, or additional guidance provided by the U.S. Department of Homeland Security, the U.S. Department of Energy, or the North American Electrical Reliability Council, after consultation with both appropriate law enforcement agencies and the applicant.

<u>Verification:</u> At least thirty (30) days prior to the initial receipt of hazardous materials on site, the project owner shall notify the CPM that a site-specific operations site security plan is available for review and approval. In the annual compliance report, the project owner shall include a statement that all current project employee and appropriate contractor background investigations have been performed, and that updated certification statements have been appended to the operations security plan. In the annual compliance report, the project owner shall include a statement that the operations security plan includes all current hazardous materials transport vendor certifications for security plans and employee background investigations.

HAZ-9: The project owner shall not allow any fuel gas pipe cleaning activities on site, either before placing the pipe into service or at any time during the lifetime of the facility, that involve “flammable gas blows” where natural (or flammable) gas is used to blow out debris from piping and then vented to atmosphere. Instead, an inherently safer method involving a non-flammable gas (e.g. air, nitrogen, steam) or mechanical pigging shall be used as per NFPA 56. A written procedure shall be developed and implemented as per NFPA 56, section 4.3.1

<u>Verification:</u> At least 30 days before any fuel gas pipe cleaning activities begin, the project owner shall submit a copy of the Fuel Gas Pipe Cleaning Work Plan (as described in NFPA 56, section 4.3.1) which shall indicate the method of cleaning to be used, what gas will be used, the source of pressurization, and whether a mechanical PIG will be used, to the CBO for information and to the CPM for review and approval.

SAMPLE CERTIFICATION (Attachment A)

Affidavit of Compliance for Project Owners

I, ____

(Name of person signing affidavit)(Title)

do hereby certify that background investigations to ascertain the accuracy of the identity and employment history of all employees of

____

(Company name)

for employment at

____

(Project name and location)

have been conducted as required by the California Energy Commission Decision for the above-named project.

____

(Signature of officer or agent)

Dated this ____________________ day of ____________________, 20 _______.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

SAMPLE CERTIFICATION (Attachment B)

Affidavit of Compliance for Contractors

I, ____

(Name of person signing affidavit)(Title)

do hereby certify that background investigations to ascertain the accuracy of the identity and employment history of all employees of

____

(Company name)

for contract work at

____

(Project name and location)

have been conducted as required by the California Energy Commission Decision for the above-named project.

____

(Signature of officer or agent)

Dated this ____________________ day of ____________________, 20 _______.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

SAMPLE CERTIFICATION (Attachment C)

Affidavit of Compliance for Hazardous Materials Transport Vendors

I, ____

(Name of person signing affidavit)(Title)

do hereby certify that the below-named company has prepared and implemented security plans in conformity with 49 CFR 172.880 and has conducted employee background investigations in conformity with 49 CFR 172, subparts A and B,

____

(Company name)

for hazardous materials delivery to

____

(Project name and location)

as required by the California Energy Commission Decision for the above-named project.

____

(Signature of officer or agent)

Dated this ____________________ day of ____________________, 20 _______.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

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HAZARDOUS MATERIALS
Appendix A

Basis for Staff's Use of 75 Parts Per Million Ammonia Exposure Criteria

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BASIS FOR STAFF'S USE OF 75 PARTS PER MILLION AMMONIA EXPOSURE CRITERIA

Staff uses a health-based airborne concentration of 75 parts per million (PPM) to evaluate the significance of impacts associated with potential accidental releases of ammonia. While this level is not consistent with the 200-ppm level used by the U.S. Environmental Protection Agency and the California Environmental Protection Agency in evaluating such releases pursuant to the Federal Risk Management Program and State Accidental Release Program, it is appropriate for use in staff's analysis of the proposed project. The Federal Risk Management Program and the State Accidental Release Program are administrative programs designed to address emergency planning and ensure that appropriate safety management practices and actions are implemented in response to accidental releases. However, the regulations implementing these programs do not provide clear authority to require design changes or other major changes to a proposed facility. The preface to the Emergency Response Planning Guidelines states that "these values have been derived as planning and emergency response guidelines, **not** exposure guidelines, they do not contain the safety factors normally incorporated into exposure guidelines. Instead they are estimates, by the committee, of the thresholds above which there would be an unacceptable likelihood of observing the defined effects." It is staff's contention that these values apply to healthy adult individuals and are levels that should not be used to evaluate the acceptability of avoidable exposures for the entire population. While these guidelines are useful in decision making in the event that a release has already occurred (for example, prioritizing evacuations), they are not appropriate for and are not binding on discretionary decisions involving proposed facilities where many options for mitigation are feasible. California Environmental Quality Act requires permitting agencies making discretionary decisions to identify and mitigate potentially significant impacts through feasible changes or alternatives to the proposed project.

Staff has chosen to use the National Research Council's 30-minute Short Term Public Emergency Limit (STPEL) for ammonia to determine the potential for significant impact. This limit is designed to apply to accidental unanticipated releases and subsequent public exposure. Exposure at this level should not result in serious effects but would result in "strong odor, lacrimation, and irritation of the upper respiratory tract (nose and throat), but no incapacitation or prevention of self-rescue." It is staff's opinion that exposures to concentrations above these levels pose significant risk of adverse health impacts on sensitive members of the general public. It is also staff's position that these exposure limits are the best available criteria to use in gauging the significance of public exposures associated with potential accidental releases. It is, further, staff's opinion that these limits constitute an appropriate balance between public protection and mitigation of unlikely events and are useful in focusing mitigation efforts on those release scenarios that pose real potential for serious impacts on the public. Table 1 provides a comparison of the intended use and limitations associated with each of the various criteria that staff considered in arriving at the decision to use the 75-ppm STPEL.

Hazardous Materials Appendix A Table1
Acute Ammonia Exposure Guidelines

Guideline	Responsible Authority	Applicable Exposed Group	Allowable Exposure Level	Allowable* Duration of Exposures	Potential Toxicity at Guideline Level/Intended Purpose of Guideline
IDLH[2]	NIOSH	Workplace standard used to identify appropriate respiratory protection.	300 ppm	30 minutes	Exposure above this level requires the use of “highly reliable” respiratory protection and poses the risk of death, serious irreversible Injury, or impairment of the ability to escape.
IDLH/10[1]	EPA, NIOSH	Work place standard adjusted for general population factor of 10 for variation in sensitivity	30 ppm	30 minutes	Protects nearly all segments of general population from irreversible effects.
STEL[2]	NIOSH	Adult healthy male workers	35 ppm	15 minutes, 4 times per 8-hour day	No toxicity, including avoidance of irritation.
EEGL[3]	NRC	Adult healthy workers, military personnel	100 ppm	Generally less than 60 minutes	Significant irritation, but no impact on personnel in performance of emergency work; no irreversible health effects in healthy adults. Emergency conditions one-time exposure.
STPEL[4]	NRC	Most members of general population	50 ppm 75 ppm 100 ppm	60 minutes 30 minutes 10 minutes	Significant irritation, but protects nearly all segments of general population from irreversible acute or late effects. One-time accidental exposure.
TWA[2]	NIOSH	Adult healthy male workers	25 ppm	8 hours	No toxicity or irritation on continuous exposure for repeated 8-hour work shifts.
ERPG-2[5]	AIHA	Applicable only to emergency response planning for the general population (evacuation) (not intended as exposure criteria) (see preface attached)	200 ppm	60 minutes	Exposures above this level entail** unacceptable risk of irreversible effects in healthy adult members of the general population (no safety margin).

1) (EPA 1987) 2) (NIOSH 1994) 3) (NRC 1985) 4) (NRC 1972) 5) (AIHA 1989)

* The (NRC 1979), (WHO 1986), and (Henderson and Haggard 1943) all conclude that available data confirm the direct relationship to increases in effect with both increased exposure and increased exposure duration.

** The (NRC 1979) describes a study involving young animals, which suggests greater sensitivity to acute exposure in young animals. The WHO (1986) warned that the young, elderly, asthmatics, those with bronchitis, and those that exercise should also be considered at increased risk based on their demonstrated greater susceptibility to other non-specific irritants.

REFERENCES FOR HAZARDOUS MATERIALS Appendix A, Table 1

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ABBREVIATIONS - HAZARDOUS MATERIALS Appendix A, Table 1

ACGIH	American Conference of Governmental and Industrial Hygienists
AIHA	American Industrial Hygienists Association
EEGL	Emergency Exposure Guidance Level
EPA	Environmental Protection Agency
ERPG	Emergency Response Planning Guidelines
IDLH	Immediately Dangerous to Life and Health Level
NIOSH	National Institute of Occupational Safety and Health
NRC	National Research Council
STEL	Short Term Exposure Limit
STPEL	Short Term Public Emergency Limit
TLV	Threshold Limit Value
WHO	World Health Organization

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HAZARDOUS MATERIALS
Appendix B

Hazardous Materials Proposed for Use at the HBEP

TABLE 5.5-2 from AFC

Chemical Inventory, Description of Hazardous Materials Stored Onsite, and Reportable Quantities

Trade Name	Chemical Name	CAS Number	Maximum Quantity Onsite	CERCLA SARA RQ[a]	RQ of Material as Used Onsite[b]	EHS TPQ[c]	Regulated Substance TQ[d]	Prop 65
Aqueous ammonia (19% NH_3 by weight)	Aqueous ammonia	7664-41-7	24,000 gallons[g]	100 pounds	526 pounds	500 pounds	500 pounds	No
Aqueous ammonia (19-29.4% NH_3 by weight)	Aqueous ammonia	7664-41-7	400 gallons	100 pounds	357 pounds	500 pounds	500 pounds	No
Anti-scalant	Anti-scalant	Various	400 gallons	[e]	[e]	[e]	[e]	No
Battery Electrolyte	Sulfuric Acid	7664-93-9	1,200 gallons	1,000 pounds	1,075 pounds	1,000 pounds	1,000 pounds	Yes
Citric acid	Citric Acid	77-92-9	625 pounds	[e]	[e]	[e]	[e]	No
Cleaning chemicals/detergents	Various	None	100 gallons	[e]	[e]	[e]	[e]	No
Cleaning chemicals/detergents for membrane-based water treatment systems (e.g., NALCO PermaClean PC-77, NALCO PermaClean PC-40, NALCO PermaClean PC-98)	Various	None	25 gallons	[e] [e]	[e] [e]	[e] [e]	[e] [e]	No No
Sanitizing chemicals for membrane-based (MF/RO/EDI) water treatment systems (e.g., NALCO PermaClean PC-11)	Dibromoacetonitrile 2,2-Dibromo-3-nitrilopropionamide Polyethylene Glycol	3252-43-5 10222-01-2 25322-68-3	400 gallons	[e]	[e]	[e]	[e]	No No No
Diesel No. 2	Diesel No. 2	68476-34-6	400 gallons	[e]	[e]	[e]	[e]	No
Hydraulic oil	Phosphate ester	None	300 gallons	42 gallons[f]	42 gallons[f]	[e]	[e]	No
Laboratory reagents	Various	Various	10 gallons	[e]	[e]	[e]	[e]	No
Lubrication oil	Oil	None	20,000 gallons	42 gallons[f]	42 gallons[f]			No
Mineral insulating oil	Oil	8012-95-1	82,000 gallons	42 gallons[f]	42 gallons[f]			No
Amine solution	Amine	2008-39-1	400 gallons	[e]	[e]	[e]	[e]	No
Sodium bisulfite ($NaHSO_3$)	Sodium bisulfite	7631-90-5	500 gallons	5,000 pounds	5,000 pounds	[e]	[e]	No
Sulfuric acid (93%)	Sulfuric acid	7664-93-9	600 gallons	1,000 pounds	1,075 pounds	1,000 pounds	1,000 pounds	Yes
Sodium hydroxide (NaOH) (20 to 50%)	Sodium hydroxide	1310-73-2	400 gallons	1,000 pounds	800 pounds	[e]	[e]	No
Sodium hypochlorite (12.5%)	Sodium hypochlorite	7681-52-9	600 gallons	100 pounds	800 pounds	[e]	[e]	No

TABLE 5.5-2 from AFC (continued)

Chemical Inventory, Description of Hazardous Materials Stored Onsite, and Reportable Quantities

Trade Name	Chemical Name	CAS Number	Maximum Quantity Onsite	CERCLA SARA RQ[a]	RQ of Material as Used Onsite[b]	EHS TPQ[c]	Regulated Substance TQ[d]	Prop 65
Hydrochloric acid	Hydrochloric acid	7647-01-0	25 gallons	5,000 pounds	5,000 pounds	[e]	15,000 pounds	No
Sodium nitrite	Sodium nitrite	7632-00-0	500 pounds	100 pounds	100 pounds	[e]	[e]	No
Proprietary corrosion/scale inhibitor (e.g., NALCO TRAC107)	Inorganic Salt Sodium Hydroxide	Proprietary 1310-73-2	25 gallons	[e] [e]	[e] [e]	[e] [e]	[e] [e]	No No
Proprietary non-oxidizing biocide (e.g., NALCO 7330)	5-Chloro-2-Methyl-4-Isothiazolin-3-one (1.1%) 2-Methyl-4-Isothiazolin-3-one (0.3%)	26172-55-4 2682-20-4	400 gallons	[e]	[e]	[e]	[e]	No No
Propylene Glycol	Propylene Glycol	57-55-6	3000 gallons	[e]	[e]	[e]	[e]	Yes
Trisodium phosphate (Na_3PO_4) or phosphate/sodium hydroxide blend (e.g., NALCO BT-3400 or NALCO BT-4000)	Trisodium phosphate	7601-54-9	400 gallons	[e]	[e]	[e]	[e]	No
Sulfur hexafluoride	Sulfur hexafluoride	2551-62-4	200 pounds	[e]	[e]	[e]	[e]	No
Acetylene	Acetylene	47-86-2	540 cubic feet	[e]	[e]	[e]	[e]	No
Oxygen	Oxygen	7782-44-7	540 cubic feet	[e]	[e]	[e]	[e]	No
Propane	Propane	74-98-6	200 cubic feet	[e]	[e]	[e]	[e]	No
EPA Protocol gases	Various	Various	2,500 cubic feet	[e]	[e]	[e]	[e]	No
Cleaning chemicals	Various	Various	Varies (less than 25 gallons of liquids or 100 pounds of solids for each chemical)	[e]	[e]	[e]	[e]	No

TABLE 5.5-2 from AFC (continued)

Chemical Inventory, Description of Hazardous Materials Stored Onsite, and Reportable Quantities

Trade Name	Chemical Name	CAS Number	Maximum Quantity Onsite	CERCLA SARA RQ[a]	RQ of Material as Used Onsite[b]	EHS TPQ[c]	Regulated Substance TQ[d]	Prop 65
Paint	Various	Various	Varies (less than 25 gallons of liquids or 100 pounds of solids for each type)	[e]	[e]	[e]	[e]	No

[a] RQ for a pure chemical, per the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Superfund Amendments and Reauthorization Act (SARA) (Ref. 40 CFR 302, Table 302.4). Release equal to or greater than RQ must be reported. Under California law, any amount that has a realistic potential to adversely affect the environment or human health or safety must be reported. [b] RQ for materials as used onsite. Since some of the hazardous materials are mixtures that contain only a percentage of an RQ, the RQ of the mixture can be different than for a pure chemical. For example, if a material only contains 10 percent of a reportable chemical and the RQ is 100 lb., the RQ for that material would be (100 lb)/(10%) = 1,000 lb. [c] Extremely Hazardous Substance (EHS) TPQ (Ref. 40 CFR Part 355, Appendix A). If quantities of extremely hazardous materials equal to or greater than the TPQ are handled or stored, they must be registered with the local Administering Agency. [d] TQ is from 19 California Code of Regulations (CCR) 2770.5 (state) or 40 CFR 68.130 (federal) [e] No reporting requirement. Chemical has no listed threshold under this requirement. [f] State RQ for oil spills that will reach California state waters [Ref. CA Water Code Section 13272(f)] [g] The ammonia tank capacity is 24,000 gallons; however, the tank is only filled to 85 percent of its capacity, or 20,400 gallons.

LAND USE

Steven Kerr

SUMMARY OF CONCLUSIONS

The proposed Huntington Beach Energy Project (HBEP) would be consistent with the applicable laws, ordinances, regulations, and standards pertaining to land use planning except for exceeding the maximum allowable height, and would not generate a significant impact under the California Environmental Quality Act (CEQA) guidelines. The proposed project is consistent with the current development patterns for the area established by the city of Huntington Beach Land Use and Coastal Elements and Zoning Ordinance.

The proposed project would not result in conversion of any farmland (as classified by the Farmland Mapping and Monitoring Program) to non-agricultural use, conflict with existing agricultural zoning or Williamson Act contracts or result in conversion of forest land to non-forest use. In addition, the proposed project would be compatible with existing on-site and nearby land uses, consistent with the planned public and semi-public development for the city of Huntington Beach, and would not divide an established community.

With the exception of exceeding the maximum allowable height, the project would be consistent with development standards of the Coastal Zone (CZ) Overlay District, the Public-Semipublic (PS) zone base zoning district, as well as other applicable provisions of the Municipal Code. Specific findings are required to be made for a variance to exceed the maximum allowable height in the PS Zone. Because staff does not believe the required findings can be made, approval of the project by the Commission would require an override.

The proposed project would not result in any physical land use incompatibilities with the existing surrounding land uses in the following areas: **Noise and Vibration, Hazardous Materials Management, and Traffic and Transportation**. The **Air Quality** and **Public Health** analyses have not been completed and will be published in Part B of the Preliminary Staff Assessment (PSA). Additionally, consistency with the applicable laws, ordinances, regulations, and standards (LORS) addressed in the **Visual Resources** section of Part A of the PSA is undetermined at this time. Therefore, staff cannot conclude if the project would or would not result in physical land use incompatibilities related to the areas of **Air Quality**, **Public Health**, and **Visual Resources**. In the Final Staff Assessment (FSA), staff will have conclusions of the projects compatibility with regards to **Air Quality, Public Health, and Visual Resources**.

Staff cannot make a recommendation whether the project meets the findings for a coastal development permit at this time. The California Coastal Commission is currently reviewing the project's conformity to relevant provisions of the California Coastal Act and the certified Local Coastal Program (LCP). California Coastal Commission staff has identified several issues of concern and staff anticipates Coastal Commission staff providing a more thorough project evaluation as part of their review of the PSA.

Socioeconomics Figure 1 does not identify the presence of an environmental justice community. Therefore, the population in the six-mile buffer does not constitute an environmental justice population as defined by *Environmental Justice: Guidance Under the National Environmental Policy Act* and would not trigger further scrutiny for purposes of an environmental justice analysis.

INTRODUCTION

This land use analysis addresses project compatibility with existing or reasonably foreseeable[1] land uses; consistency with applicable city of Huntington Beach and state LORS; and potential project related direct, indirect, and cumulative environmental effects.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Land Use Table 1 lists the state and local land use LORS applicable to the proposed project. The proposed project's consistency with these LORS is analyzed under the "Assessment of Impacts and Discussion of Mitigation" subsection and in **Land Use Table 2**. The project site does not involve federally managed lands, therefore, there are no identified applicable federal land use related LORS.

Land Use Table 1
Applicable Laws, Ordinances, Regulations, and Standards (LORS)

Applicable LORS	Description
State	
Subdivision Map Act (Public Resources Code Section 66410-66499.58)	This section of the California Public Resources Code provides procedures and requirements regulating land division (subdivisions) and parcel legality. Regulation and control of the design and improvement of subdivisions have been vested in the legislative bodies of local agencies.
Warren-Alquist Act, Public Resources Code § 25500 et seq. California Coastal Act, Public Resources Code §30000, et seq.	The Coastal Act establishes a comprehensive approach to govern land use planning along the entire California coast. The Coastal Act also sets forth general policies (Public Resources Code §30200 et seq.) that govern the California Coastal Commission's review of permit applications and local plans. In the case of energy facilities, Section 30600 of the Coastal Act states: (a) Except as provided in subdivision (e), and in addition to obtaining any other permit required by law from any local government or from any state, regional, or local agency, any person, as defined in Section 21066, wishing to perform or undertake any development in the coastal zone, other than a facility subject to Section 25500, shall obtain a coastal development permit. Section 25500 states that the Energy Commission has exclusive power to certify sites for power generation facilities 50 megawatts or greater and related facilities anywhere in the state.

[1]Whether a project is reasonably foreseeable (i.e., a "probable future project") for purposes of cumulative impact analysis depends on the nature of the resource in question, the location of the project, and the type of project. (14 California Code of Regulations, Section 15130(b)(2).

Public Resources Code §25529 of the Warren-Alquist Act	Persuant to section 25529 of the Warren-Alquist Act, the Energy Commission shall require public access to coastal resources as a condition of certification of a facility proposed in the Coastal Zone as follows: “When a facility is proposed to be located in the coastal zone or any other area with recreational, scenic, or historic value, the commission shall require, as a condition of certification of any facility contained in the application, that an area be established for public use, as determined by the commission. Lands within such area shall be acquired and maintained by the applicant and shall be available for public access and use, subject to restrictions required for security and public safety. The applicant may dedicate such public use zone to any local agency agreeing to operate or maintain it for the benefit of the public. If no local agency agrees to operate or maintain the public use zone for the benefit of the public, the applicant may dedicate such zone to the state. The commission shall also require that any facility to be located along the coast or shoreline of any major body of water be set back from the shoreline to permit reasonable public use and to protect scenic and aesthetic values.”
Local	
City of Huntington Beach General Plan	The General Plan for the city of Huntington Beach, adopted May 13, 1996, provides the framework for management and utilization of the city’s physical, economic and human resources. The General Plan establishes the location, types, intensity and distribution of land uses throughout the city, including areas within the coastal zone. The General Plan is organized into the following Chapters: Community Development; Infrastructure and Community Services; and Natural Resources; and Hazards. In addition, the city has adopted a Coastal Element that serves as the city’s Local Coastal Program, and was certified by the California Coastal Commission in March 1985.
Huntington Beach Zoning and Subdivision Ordinance	The Zoning Ordinance establishes specific zone districts and land use regulations for properties within the city.
City of Huntington Beach Urban Design Guidelines	The Urban Design Guidelines implement the Urban Design Element of the General Plan. The Guidelines provide guidance for various types of uses, as well as specific comments regarding lighting, landscaping, and other features of specific sites within the community.
City of Long Beach General Plan Land Use Element	HBEP would include a 16-acre laydown site at AES Alamitos Generating Station in the city of Long Beach. The city of Long Beach General Plan Land Use Element addresses the long-range use and development of land within the city.
City of Long Beach Zoning Regulations	Regulates land use and development within the city in conformance with the General Plan.

SETTING

PROJECT SITE

The proposed Huntington Beach Energy Project site is located at 21730 Newland Street in the city of Huntington Beach, just northeast of the intersection of the Pacific Coast Highway (Highway 1) and Newland Street. The project would be located entirely within the existing Huntington Beach Generation Station, an operating power plant.

HBEP would be a natural gas-fired, combined-cycle, air-cooled, 939-megawatt (MW) electrical generating facility consisting of two independently operating, three-on-one, combined-cycle gas turbine power blocks. Other equipment and facilities to be constructed and shared by both power blocks include natural gas compressors, water treatment facilities, emergency services, and administration and maintenance buildings.

The Assessor's Parcel Numbers (APN) for the HBEP site are 114-150-82 and 114-150-96. HBEP would utilize a 28.6 acre portion of APN 114-150-96. If the proposed project is approved by the Energy Commission, following approval and prior to commencing construction of the first power block, the project owner shall obtain a lot line adjustment to establish a single parcel for the 28.6 acre HBEP site. This is included as staff's proposed Condition of Certification **LAND-1**.

The access to the HBEP site would continue to be from Newland Street. Newland Street is a two- to four-lane secondary arterial that connects Pacific Coast Highway in the south to the city of Huntington Beach boundary in the north.

Construction Laydown and Parking Areas

HBEP construction would require both onsite and offsite laydown and construction parking areas. According to the Application for Certification (AFC), approximately 22 acres of construction laydown would be needed. Approximately six acres at the Huntington Beach Generation Station are proposed to be used for a combination of laydown and construction parking, and 16 acres at the AES Alamitos Generation Station (AGS) would be used for construction laydown (component storage only/no assembly of components at AGS) (AFC, Figure 5.6-4). During HBEP construction, the large components would be hauled from the construction laydown area at the AGS site to the HBEP site as they are ready for installation. (HBEP 2012a, p. 1-2)

Construction worker parking for HBEP and the demolition of the existing units at the Huntington Beach Generation Station would be provided by a combination of onsite and offsite parking. A maximum of 330 parking spaces would be required during construction and demolition activities. The proposed construction/demolition worker parking areas are listed in **Land Use Table 2** below and are identified in **Traffic and Transportation Figure 4.** The parking areas designated by the applicant would accommodate over 1,000 parking spaces which would be more than adequate for the highest number of workers anticipated for HBEP construction.

Land Use Table 2
HBEP Construction Parking Areas

Parking Area Location	Parking Area size	Number of Spaces (approximately)
On-site at HBEP	1.5-acres	130
Plains All American Tank Farm, adjacent to HBEP	1.9-acres	170
Graded area West of HBEP site on Newland Street	3-acres	300
Graded area NE corner of PCH and Beach Blvd.	2.5-acres	215
City of Huntington Beach South Beach Parking Lot SW corner of PCH and Beach Blvd.	N/A	225
Total Number of Spaces		1,040

Source: HBEP2012a

Establishing temporary parking lots for use by HBEP construction workers within the city of Huntington Beach would typically require approval of a coastal development permit, but for the exclusive jurisdiction of the Energy Commission (CHB 2012a). Through discussions with city staff and reviewing the general plan and zoning code, it is clear that maintaining access to shore parking areas for residents and visitors is a priority for the city. As stated in the March 16, 2012, letter from the city of Huntington Beach, the city has expressed a willingness to allow parking for up to 225 construction and demolition workers personal vehicles for HBEP within the city's South Beach parking lot (HBEP 2012a, Appendix 5.12D). To ensure adequate access for residents and visitors, the city would prohibit the use of the South Beach parking lot by construction workers on weekends, from Memorial Day to Labor Day, and on holidays during the summer (Memorial Day, Fourth of July, and Labor Day). The applicant has also provided letters from each of the entities who own or control the other three private offsite construction parking areas indicating a willingness to allow construction worker parking (HBEP 2012n). Additionally, the applicant proposes to shuttle construction workers from the off-site parking areas to the project site. Staff is recommending Condition of Certification **TRANS-3** which would require the applicant to prepare a traffic control plan to ensure all construction worker parking is in place as designated in this analysis. Upon implementation of the plan, construction workforce parking impacts would be less than significant. For additional information regarding construction workforce parking, please see the **Traffic and Transportation** section of this assessment.

<u>Transmission Lines and Infrastructure</u>

The existing Huntington Beach Generation Station has various ancillary facilities that would support the HBEP, such as the Southern California Gas Company (SoCalGas) natural gas pipeline serving the site, the existing onsite Southern California Edison (SCE) 230-kV switchyard, and the existing connections to the city of Huntington Beach potable water system and sanitary sewer system. Other existing infrastructure at the existing Huntington Beach Generation Station, such as distribution and storage systems would also be reused to the greatest extent possible.

SURROUNDING AREA

Much of the city has been developed, with many of the remaining undeveloped parcels committed to development by specific plans and development agreements or preserved for open space. The city's General Plan indicates that the "…fundamental patterns, distribution, and form of development of use have been established" (CHB 1996, p. II-LU-II).

Existing land uses immediately adjacent to and nearby the proposed HBEP site within Huntington Beach include:

- North: The area immediately adjacent to the project site includes the Southern California Edison 230 kV Switchyard and several empty fuel oil storage tanks. Between Edison Drive and the Huntington Beach Channel are an animal hospital, auto wrecking, and a recycling center. Beyond the channel uses transition from mini-storage and warehouses to residential neighborhoods with parks and schools.
- South: A narrow strip of land which is home to the Wetlands and Wildlife Care Center shares a property boundary and is adjacent to the existing HBGS which

separates the HBEP site from Pacific Coast Highway. Across the highway is the Huntington Beach State Park and Pacific Ocean.

- East: Immediately adjacent to the southeast of the project site and southwest of the channel is the Huntington Beach Wetland Preserve / Magnolia Marsh Restoration Project area, a designated Environmentally Sensitive Habitat Area (ESHA). The Huntington Beach Channel (a facility operated by the Orange County Flood Control District [OCFCD]) runs to the east of the project site. Across the channel to the east is another tank farm and to the northeast is the Ascon/Nesi Landfill within the Magnolia Pacific Specific Plan area. To the east of Magnolia Street is an established low density residential neighborhood. The Orange County Sanitation District is between Brookhurst Street and the Santa Ana River.
- West: Across Newland Street are the Huntington-By-The-Sea Mobile Home and RV Park and Cabrillo Mobile Home Park. Also of note to the northwest, is a partially completed new subdivision, Pacific Shores with bungalow and townhome units currently for sale. The Downtown Specific Plan and Beach and Edinger Corridors Specific Plan areas are west beyond more coastal conservation areas.

The following are educational, park, recreation, church, and hospital land uses within one mile of the project site:

- Huntington State Beach
- Ralph Bauer Public Park
- Edison Community Park
- Edison High School
- Kettler Elementary School
- Eader Park and Library
- Gisler Park
- The Church of Jesus Christ of Latter-day Saints
- Brethern Christian Junior and Senior High School
- Seeley Park

The State of California maintains ownership and jurisdiction of the Huntington Beach State Park. The remainder of the study area is within the city limits of Huntington Beach.

The project site and surrounding area do not contain land identified as Important Farmlands (CDOC 2010).

GENERAL PLAN LAND USE AND ZONING DESIGNATIONS

Land Use Figure 1 (General Plan Land Use Designations Map) and **Land Use Figure 2** (Zoning and Subdivision Ordinance Map) illustrate the land use and zoning designations of the proposed power plant site. In addition, these figures illustrate the land use and zoning designations of lands within the one-mile buffer of the proposed power plant site. The land use and zoning designations of the areas surrounding the proposed project are presented to help illustrate the affected local agencies' existing and planned pattern of land use development in the project area.

PROJECT SITE

The HBEP site is designated by the Huntington Beach General Plan as Public (P). The Huntington Beach General Plan states that typical permitted uses include governmental administrative and related facilities, such as public utilities, schools, public parking lots, infrastructure, religious and similar uses (CHB 1996, p. II-LU-25). The goal of this land use designation is to achieve the development of a mix of governmental service, institutional, educational, and religious uses that support the needs of Huntington Beach's residents (CHB 1996, p. II-LU-42).

Included in the city of Huntington Beach General Plan Land Use Element is a Community District and Subarea Schedule. The Community District and Subarea Schedule describes the intended functional role of each of the city's principal subareas and references the applicable permitted uses, densities, and pertinent overlays. Development shall adhere to the policies for permitted use and design and development prescribed for each land use category in the preceding section of the Land Use Element and any additional specific design and development standards listed in the schedule. The HBEP site is within Subarea 4G "Edison Plant" (CHB 1996, Figure LU-6, p. II-LU-66). Land use categories within Subarea 4G include Public (P) and Conservation (OS-C) with permitted uses of wetlands conservation and utility uses. The corresponding specific design and development standard listed in the schedule is Policy LU 13.1.8. This policy is to ensure that the city's public buildings, sites, and infrastructure improvements are designed to be compatible in scale, mass, character, and architecture with existing buildings and pertinent design characteristics prescribed by this General Plan for the district or neighborhood in which they are located, and work with non-city public agencies to encourage compliance (CHB 1996, p. II-LU-43).

General Plan land use designations for the four temporary HBEP offsite construction/demolition parking areas are as follows:

- Newland Street – Residential Medium Density (RM-15)
- Pacific Coast Highway and Beach Boulevard – Commercial Visitor (CV-F2)
- City of Huntington Beach shore parking – Open Space Shoreline (OS-S)
- Plains All American Tank Farm – Public (PS)

The HBEP site is zoned Public-Semi-public (PS), and is included in the Coastal Zone Overlay District (CZ), as well as the Oil Production Overlay District (O). Uses allowed in the PS district include major and minor utilities, cemeteries, cultural institutions, hospitals, park and recreation facilities, public safety facilities, general residential care, and schools. The zoning code provides that major utilities are subject to a conditional use permit. Major utilities are defined as: Generating plants, electrical substations, above-ground electrical transmission lines, switching buildings, refuse collection, transfer, recycling or disposal facilities, flood control or drainage facilities, water or wastewater treatment plants, transportation or communications utilities, and similar facilities of public agencies or public utilities.

Within the O overlay district, oil operations are permitted subject to certain conditions. Because the project does not concern oil operations, the O overlay district is not discussed further. Within the CZ overlay district, a development requires a Coastal Development Permit.

Zoning for the four potential temporary offsite construction/demolition parking areas are as follows:

- Newland Street – Industrial Limited (IL)
- Pacific Coast Highway and Beach Boulevard – Commercial Visitor (CV) and Coastal Conservation (CC)
- City of Huntington Beach shore parking – Downtown Specific Plan (SP-5)
- Plains All American Tank Farm – Public-Semi-public (PS)

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Energy Commission staff has analyzed the information provided in the AFC and has acquired information from other sources to determine consistency of the proposed HBEP with applicable land use LORS and the proposed project's potential to have significant adverse land use-related impacts.

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

Significance criteria used in this document are based on Appendix G of the CEQA Guidelines and performance standards or thresholds identified by Energy Commission staff, as well as applicable LORS utilized by other governmental regulatory agencies.

An impact may be considered significant if the proposed project results in:

➢ Conversion of Farmland or Forest Land.

  - Conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide or Local Importance (Farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.[2]
  - Conflict with existing zoning for agricultural use, or a Williamson Act contract.
  - Conflict with existing zoning for, or cause rezoning of, forest land [as defined in Pub. Resources Code §12220 (g)), timberland (as defined by Pub. Resources Code §4526), or timberland zoned Timberland Production (as defined by Gov. Code §51104(g)).
  - Loss of forest land or conversion of forest land to non-forest use.
  - Changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use[3] or conversion of forest land to non-forest use.

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[2] FMMP defines "land committed to non-agricultural use" as land that is permanently committed by local elected officials to non-agricultural development by virtue of decisions which cannot be reversed simply by a majority vote of a city council or county board of supervisors.

[3] A non-agricultural use in this context refers to land where agriculture (the production of food and fiber) does not constitute a substantial commercial use.

- Physical disruption or division of an established community.
- Conflict with any applicable habitat conservation plan, natural community conservation plan, or biological opinion.
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction, or that would normally have jurisdiction, over the project adopted for the purpose of avoiding or mitigating environmental effects. This includes, but is not limited to, a General Plan, redevelopment plan, or zoning ordinance.
- Incremental impacts that, although individually limited, are cumulatively considerable when viewed in connection with other project-related effects or the effects of past projects, other current projects, and probable future projects.[4]An unmitigated noise, odor, public health or safety hazards, visual, or adverse traffic affect on surrounding properties.

DIRECT/INDIRECT IMPACTS AND MITIGATION

This section discusses the applicable potential project impacts and associated methods and thresholds of significance referenced above.

AGRICULTURE AND FOREST

Would the project convert Farmland to non-agricultural use?

The proposed HBEP site does not contain, and would therefore not convert, any farmland with FMMP designations of Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance to non-agricultural use. The proposed HBEP would have no impact with respect to farmland conversion.

Would the project conflict with existing zoning for agricultural use or a Williamson Act contract?

The California Land Conservation Act, commonly referred to as the Williamson Act, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space uses. (Chapter 7, Agricultural Land, Gov. Code § 51200-51297.4) There are no existing agricultural uses present on the proposed project site. The proposed HBEP is not located on land that is under a Williamson Act contract and as a result would not conflict with any Williamson Act contracts.

Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Pub. Resources Code §12220(g)), timberland (as defined by Pub. Resources Code §4526), or timberland zoned Timberland Production (as defined by Gov. Code §51104(g))?

The proposed project site is not zoned for forest land, timberland, or for timberland production. In addition, there is no land zoned for such purposes within one mile of the

[4] Cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects and can result from individually minor, but collectively significant actions taking place over a period of time (CEQA Guidelines §15355; 40 CFR 1508.7)

project site. Therefore, there would be no conflict with, or cause for, rezoning of forest land or timberland and as a result there would be no impact to forest land or timberland.

PHYSICAL DISRUPTION OR DIVISION OF AN ESTABLISHED COMMUNITY

The proposed HBEP would be located within the boundaries of an existing power plant that has been in its current location since the late 1950s. Access to the proposed project would be through existing rights-of-way on Newland Street. The project site is also located adjacent to Pacific Coast Highway which is a major transportation corridor. In addition, the proposed project is located on lands designated and zoned for public utility uses, including electrical generating facilities, subject to approval of a conditional use permit and coastal development permit. There would not be a need to relocate any residences as a result of the HBEP. Therefore, the HBEP would not physically divide or disrupt any community within Huntington Beach. In addition, the proposed project would not involve the displacement of any existing development or result in new development that would physically divide an existing community.

CONFLICT WITH ANY APPLICABLE HABITAT OR NATURAL COMMUNITY CONSERVATION PLAN

The HBEP is not located within any Habitat Conservation Plan or Natural Community Conservation Plan and there will be no conflicts as a result of the proposed project.

CONFLICT WITH ANY APPLICABLE LAND USE PLAN, POLICY OR REGULATION

Energy Commission staff evaluates (Cal. Code Regs., tit. 20, § 1744) the information provided by the applicant in the AFC (and any supplemental information), project design, site location, and operational components to determine if elements of the proposed project would conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project, or that would normally have jurisdiction over the project except for the Energy Commission’s exclusive authority. As part of the licensing process, the Energy Commission must determine whether a proposed facility complies with all applicable state, regional, and local LORS (Pub. Resources Code § 25523[d][1]). The Energy Commission must either find that a project conforms to all applicable LORS or make specific findings that a project’s approval is justified even where the project is not in conformity with all applicable LORS (Pub. Resources Code § 25525). When determining LORS compliance, staff is required to give “due deference” to an agency’s assessment of whether a proposed project is consistent with LORS under the agency’s jurisdiction (Cal. Code Regs. tit. 20, § 1714.5). On past projects, staff has requested that an agency provide a discussion of the findings and conditions that the agency would make when determining whether a proposed project would comply with the agency’s LORS, were they the permitting authority. Any conditions recommended by an agency are considered by Energy Commission staff for inclusion in the proposed conditions of certification for the project.

Subdivision Map Act

The Assessor’s Parcel Numbers for the HBEP site are 114-150-82 and 114-150-96. HBEP would utilize 28.6, acres, using only a portion of APN 114-150-96. Following project approval and prior to construction of the first power block, the project owner would obtain a lot line adjustment from the city of Huntington Beach to establish a single parcel for the 28.6 acre HBEP site. Proposed Condition of Certification **LAND-1** would ensure that the lot line adjustment is obtained in compliance with the Subdivision Map Act and Title 25, Subdivisions, of the City of Huntington Beach Zoning and Subdivision Ordinance.

Warren-Alquist Act

The Warren-Alquist Act (Pub. Resources Code § 25500 et seq.), discusses the Energy Commission's statutory requirement for a public use area for facilities proposed in the Coastal Zone.

Pursuant to § 25529 of the Warren-Alquist Act, the Energy Commission shall require the establishment of an area for public use as a condition of certification of a facility proposed in the Coastal Zone as follows:

"When a facility is proposed to be located in the Coastal Zone or any other area with recreational, scenic, or historic value, the [Energy] Commission shall require, as a condition of certification of any facility contained in the application, that an area be established for public use, as determined by the Commission. Lands within such area shall be acquired and maintained by the applicant and shall be available for public access and use, subject to restrictions required for security and public safety. The applicant may dedicate such public use zone to any local agency agreeing to operate or maintain it for the benefit of the public. If no local agency agrees to operate or maintain the public use zone for the benefit of the public, the applicant may dedicate such zone to the state. The [Energy] Commission shall also require that any facility to be located along the coast or shoreline of any major body of water be set back from the shoreline to permit reasonable public use and to protect scenic and aesthetic values."

The HBEP would be located entirely within the site of the existing Huntington Beach Generation Station. The Huntington State Beach is located to the southwest of the project site across the Pacific Coast Highway, which provides two miles of existing public access to the coast. An additional 3.5 miles of city beach with public access continues north of the state beach. Staff will continue to work with the city of Huntington Beach and the California Coastal Commission to determine whether adequate access exists or if the project would be required to provide additional access.

California Coastal Act

The project must demonstrate consistency with the Coastal Act policies, which constitute the standards used by the California Coastal Commission (Coastal Commission) in its coastal development permit decisions.

The project site is located within the Coastal Zone in the city of Huntington Beach. The California Coastal Act requires each local government with land area located within the Coastal Zone to prepare a local coastal program (LCP) for management of such land areas. Once the Coastal Commission certifies a LCP, the authority to issue "coastal development permits" for development within the coastal zone is delegated to the local jurisdiction. (Public Resources Code §30519(a))

Notwithstanding the provisions of Section 30519, the Coastal Act, in Section 30600(a), provides that a coastal development permit is not required for a facility subject to the provisions of Public Resources Code Section 25500 (i.e., a thermal power plant or related facility subject to the Warren-Alquist Act).

However, pursuant to Section 25523(b) of the Warren-Alquist Act and Section 30413(d) of the Coastal Act, the Coastal Commission role in the Energy Commission's AFC proceedings is to review those proposals that are within the coastal zone and to provide for the Energy Commission the Coastal Commission's findings with respect to the proposed project's conformity to relevant provisions of the Coastal Act and certified local coastal program. The report must include the following key findings:

1. The compatibility of the proposed site and related facilities with the goal of protecting coastal resources.
2. The degree to which the proposed site and related facilities would conflict with other existing or planned coastal-dependent land uses at or near the site.
3. The potential adverse effects that the proposed site and related facilities would have on aesthetic values.
4. The potential adverse environmental effects on fish and wildlife and their habitats.
5. The conformance of the proposed site and related facilities with certified local coastal programs in those jurisdictions.
6. The degree to which the proposed site and related facilities could reasonably be modified so as to mitigate potential adverse effects on coastal resources, minimize conflict with existing or planned coastal-dependent uses at or near the site, and promote the policies of this division.
7. Any other matter(s) that the Coastal Commission deems appropriate and necessary in the implementation of the Coastal Act applicable to the project.

Section 25523(b) of the Warren-Alquist Act requires the Energy Commission to include in its decision on the AFC any "specific provisions" that the Coastal Commission determines are necessary to bring the project into conformity with the policies of the Coastal Act, unless the Energy Commission specifically finds that the adoption of the provisions specified in the report would result in greater adverse effect on the environment or that the provision in the report would not be feasible.

Energy Commission staff has received correspondence from Coastal Commission staff pursuant to §25523(b) of the Warren-Alquist Act and to coordinate the submittal of the Coastal Commission's report pursuant to §30413(d) of the Coastal Act. Coastal Commission staff submitted a letter on August 3, 2012, providing initial comments and another on January 23, 2013, providing an update on the status of their review. In their letters, Coastal Commission staff identified several issues that they believe may require additional information prior to making the findings necessary to complete their report. Staff anticipates Coastal Commission staff providing a more thorough project evaluation as part of their review of the PSA. (CCC 2012a, CCC 2013a) Therefore, Energy Commission staff cannot make a conclusion that the project is consistent with the California Coastal Act at this time.

City of Huntington Beach General Plan

As part of staff's analysis of local LORS compliance and to determine the city's view of the project's consistency with its LORS, staff has had personal communications with city of Huntington Beach staff regarding LORS compliance.

State law requires each county and city to prepare and adopt a comprehensive and long-range general plan for its physical development (Government Code Section 65300). The general plan must include elements such as land use, circulation, housing, open-space, conservation, safety, and noise as identified in state law (Government Code Section 65302), to the extent that the topics are locally relevant. Once a general plan is adopted, its maps, diagrams, and development policies form the basis for a jurisdiction's zoning, subdivision, and public works actions. Under California law, no specific plan, area plan/community plan, zoning, subdivision map, nor public works project may be approved unless the jurisdiction finds that it is consistent with the adopted general plan.

The General Plan for Huntington Beach was adopted by the city council on May 13, 1996; several of the elements have since been updated and amended. The General Plan, as mandated by state law, sets forth the comprehensive, long-range plan to serve as a guide for the physical development of the city. Each element of the General Plan is organized into statements of Goals, Objectives, Policies, and Implementation Programs. The General Plan Elements are organized into four chapters: Community Development (includes Land Use, Urban Design, Historic and Cultural Resources, Economic Development, Growth Management and Housing Elements); Infrastructure and Community Services (includes Circulation, Public Facilities and Public Services, Recreation and Community Services and Utilities Elements); Natural Resources (includes Environmental Resources/Conservation, Air Quality and Coastal Elements); and Hazards (includes Environmental hazards, Noise and Hazardous Materials Elements).

Land Use Element

The project site is designated as Public, which includes governmental administrative and related facilities, such as public utilities, schools, public parking lots, infrastructure, religious and similar uses (CHB 1996, Table LU-2a). The power plant at the site has been in operation since the late 1950s, was previously owned by Southern California Edison, and is generally referenced in General Plan documents as the Edison Plant.

The following provisions of the Land Use Element are relevant to the project:

Land Use Element, Goal LU-2, seeks to ensure that development is adequately served by transportation and utility infrastructure, and public services. The project would be part of the effort to generate adequate and reliable electric power needed for use by local communities, including Huntington Beach. The project would also be built within an existing electrical generating facility site served by existing infrastructure and services adequate to support additional development. The General Plan recognizes the need for such service, and the project would, therefore, appear to be consistent with this policy.

The General Plan recognizes the value of diversity in land uses, while calling for the city to maintain environmental resources, scale, and character (Goal LU-7). As part of this effort, Policy 7.1.1 provides for the accommodation of existing uses and new development consistent with the Land Use and Density Schedules. The project use is consistent with the General Plan designation of Public; the schedules provide for no density standard for this designation. The project appears to be consistent with these provisions.

Goal LU-13 seeks to achieve the development of a mix of governmental service, institutional, educational and religious uses that support the needs of Huntington Beach's residents. Objective LU 13.1 calls for the continuation of existing and development of new uses that support the needs of existing and future residents. Policy 13.1.1 allows for the continuation of existing public and private institutional, cultural, educational, and health uses at their present locations and development of new uses in areas designated for such uses on the Land Use Map. These provisions of the General Plan identify diversity in land uses as having value to the community. The project would develop and operate new power generators within the site of an existing electrical generating facility, and provide service and employment that is identified in the General Plan as a priority. The project would appear to be consistent with these provisions.

Table LU-4 in the Community Development Chapter identifies the "Edison Plant" on the Community District and Subarea Schedule. The site characteristic is listed as "Permitted Use," and the "Standards and Principles" section provides as follows: Category: Public ("P") and Conservation ("OS-C"): Wetlands Conservation, Utility Uses. Under the characteristic "Design and Development," the General Plan provides that it shall be in accordance with Policy LU 13.1.8, which states as follows: "Ensure that the city's public buildings, sites, and infrastructure improvements are designed to be compatible in scale, mass, character and architecture with existing buildings and pertinent design characteristics prescribed by this General Plan for the district or neighborhood in which they are located, and work with non-city public agencies to encourage compliance."

The emphasis in these provisions is on compatibility with surrounding uses and neighborhood characteristics. Please refer to the **Visual Resources** section of this staff assessment for a discussion of the project's consistency with Policy LU 13.1.8 and other LORS relevant to the project's visual impact. Energy Commission staff is working with city staff and the applicant to develop screening and design enhancements that would improve the visual characteristics of the proposed project. The project's consistency with other provisions of the Coastal Element and Zoning Ordinance is discussed below. The proposed project would not construct new off-site facilities. For a discussion of the project's impacts on the wetlands adjacent to the site, please refer to the **Biological Resources** section of this staff assessment.

Coastal Element

The proposed project is located in the Coastal Zone, and is subject to the Coastal Element of the General Plan. The Coastal Element also is part of the city's certified Local Coastal Program (LCP). The LCP consists of a Land Use Plan (Coastal Element) and an Implementation Program. The Implementation Program consists of the city's Zoning Code (the entire document), Zoning District Maps, and six Specific Plans.

Consistent with the Land Use Element, the project site is also designated within the Coastal Element as Public (P). The Coastal Element identifies the existing land use of the site as a regionally serving electrical generating plant, in which Coastal Element policy provides for the use to continue (Coastal Element, p. IV-C-80). The Coastal Element also provides the Community District and Sub-area Schedule in Table C-2, which is the same as Land Use Element Table LU-4 mentioned above.

The existing Huntington Beach Generation Station site is recognized in the Coastal Element as an important coastal-dependent facility within the Coastal Zone. The Coastal Element identifies several issues relating to energy facilities. The following issues regarding energy are specifically related to the HBEP:

35. Visually degraded areas in the Coastal Zone should be enhanced. Design review, placing transmission lines underground, screening the electrical energy generating plant and oil facilities, preserving mature trees, and litter control should be promoted to enhance aesthetic quality of the city's scenic coastal resources.
50. Huntington Beach accommodates energy related facilities within its Coastal Zone. The potential adverse safety, aesthetic and biological impacts of these facilities to the community and its coastal resources must be minimized to the maximum extent feasible through municipal regulation and coordination with responsible outside agencies.
54. Unitization, and consolidation of energy facilities should be encouraged to increase efficiency and safety, and minimize aesthetic and biological impacts to coastal resources.
55. Compatibility between energy related facilities and other land uses could be increased through the use of buffers, screening, and setbacks.
58. Beach access and aesthetics could be improved through energy facility consolidation, improved maintenance of energy facilities, screening and buffering.

The goals, objectives and policies of the Coastal Element are intended to address these identified issues, as well as the requirements of the Coastal Act.

Goal C-1 is to develop a land use plan for the Coastal Zone that protects and enhances coastal resources, promotes public access and balances development with facility needs.

Objective C 1.1 is to ensure that adverse impacts associated with coastal zone development are mitigated or minimized to the greatest extent feasible. Throughout this staff assessment, staff proposes conditions of certification with the intent of ensuring that adverse impacts associated with HBEP are mitigated or minimized to the greatest extent feasible. Policy C 1.1.1 states that with the exception of hazardous industrial development, new development shall be encouraged to be located within, contiguous or in close proximity to, existing developed areas able to accommodate it or, where such areas are not able to accommodate it, in other areas with adequate public service and where it will not have significant adverse effects, either individually or cumulatively, on coastal resources. The project appears to be consistent with these provisions in that the project would be developed within an existing electrical generating facility site and would not result in a change in land use that adversely affects coastal resources.

Objective C 1.2 is to provide a land use plan that balances location, type and amount of land use with infrastructure needs and Policy 1.2.1 is to accommodate existing uses and new development in accordance with the Coastal Element Land Use Plan and the Development and Density Schedule Table. The Coastal Element Land Use Plan and Development Density Schedule Table C-1, designates the project site Public (P). The Coastal Element describes the existing project site as a regionally serving electrical generating plant and provides for the use to continue.

Goal C-8 seeks to accommodate energy facilities with the intent to promote beneficial effects while mitigating any potential adverse impacts. Objective C 8.2 encourages the production of energy resources as efficiently as possible with minimal adverse impacts and Policy C 8.2.4 supports accommodating coastal dependent energy facilities within the Coastal Zone consistent with the Coastal Act. The existing Huntington Beach Generation Station is defined as a coastal-dependent energy facility in the city of Huntington Beach. Based on the priority of the city of Huntington Beach's Coastal Element to redevelop existing industrial parcels in the coastal zone rather than establishing new industrial parcels in the coastal zone, the repowering of the existing Huntington Beach Generation Station through the implementation of the HBEP is consistent with the Coastal Element as it would reuse and connect to existing industrial infrastructure, including the: existing SCE switchyard, existing city of Huntington Beach potable water and sanitary sewer pipelines, and the existing Huntington Beach Generation Station's ocean outfall for discharge of storm water and process water.

In their December 6, 2012 letter, the city of Huntington Beach noted that residents and others have expressed opinions that the elimination of once-through-cooling using ocean water eliminates the need to site the HBEP at the existing Huntington Beach Generation Station location (CHB 2012a). Staff has determined that the HBEP on its current site would avoid potential impacts due to the development of new water, gas and sewer lines, a new switchyard and transmission lines as well as development of an undeveloped site. For additional information regarding the elimination of once-through-cooling, reuse of the existing SCE switchyard and transmission lines, and the importance of the location to provide essential electrical service, please see the **Project Description**, **Transmission System Engineering, and Alternatives.**

Although the general plan land use designations and several goals, objectives, and policies of the general plan would support the redevelopment and continuance of the electrical generating facility use at the project site, outstanding issues remain that require additional information and analysis related to the **Visual Resources** section and the Coastal Commission's review of this staff assessment prior to staff being able to make a complete determination on the project's consistency with the general plan.

The city of Huntington Beach General Plan expresses the city's concern with the visual impact of the existing facility and calls for the protection and enhancement of the city's public coastal views upon redevelopment of the site. Energy Commission staff is working with city staff and the applicant to develop screening and design enhancements that would improve the visual characteristics of the proposed project. The **Visual**

Resources section of this staff assessment discusses additional information needed prior to determining the potential visual impacts of the project.

Also, as mentioned above, staff anticipates Coastal Commission staff providing a more thorough project evaluation as part of their review of the PSA prior to completing their report on the project's consistency with the Coastal Act and the Local Coastal Plan, of which the Coastal Element of the general plan is a key component.

City of Huntington Beach Zoning Ordinance

The HBEP site is zoned Public–Semipublic (PS), and is included in the Coastal Zone Overlay District (CZ), as well as the Oil Production Overlay District (O). The Huntington Beach Zoning and Subdivision Ordinance defines a power plant as an Energy Facility (Section 203.06) and is classified as a Major Utility use within the Public and Semipublic Use Classifications (Section 204.08). Major Utility uses are permitted in the Public – Semipublic District upon the issuance of a Conditional Use Permit by the city of Huntington Beach (Section 241.02). Within the CZ overlay district, any development requires the issuance of a Coastal Development Permit by the city of Huntington Beach (Section 245.10). But for the Energy Commission's exclusive authority to license the project, siting the HBEP at the proposed location would require the following land use actions by the city of Huntington Beach:

- A Variance to exceed the maximum allowable building height within the PS zone.
- A Conditional Use Permit to allow development of a Major Utility use within the PS zone.
- A Coastal Development Permit to allow development within the CZ overlay district.

The applicable development standards within the PS zone and CZ overlay district for HBEP are presented as follows:

Minimum Lot Area: The 28.6-acre HBEP site would meet the minimum lot area standard of 2 acres.

Minimum Lot Width: The HBEP site would meet the minimum lot width of 100 feet.

Minimum Setbacks: The minimum required front setback is ten feet, which the project as proposed would comply with. There is no required side or rear yard setback. However, a 100-foot buffer from environmentally sensitive habitat areas is required within the CZ overlay district. The project will comply with the 100-foot buffer requirement, which is further discussed in the **Biological Resources** section.

Maximum Height of Structures: The maximum allowable height in the PS zone and CZ overlay district is 50 feet, with the exception that necessary mechanical appurtenances may exceed the maximum permitted height by no more than 10 feet. The stacks for HBEP Blocks 1 and 2 would be approximately 120 feet tall. The necessary findings the city would make to grant a variance to exceed the maximum height requirements, but for the exclusive jurisdiction of the Energy Commission, are presented below.

<u>Maximum Floor Area Ratio (FAR):</u> The FAR is determined by dividing the gross floor area of all buildings on a lot by the area of that lot. The maximum allowable FAR in the PS zone is 1.5. The project would comply with this requirement as the FAR of the project buildings would be approximately 0.04 (HBEP 2012n, p. 83, HBEP 2013m).

<u>Signs:</u> Any proposed signage is required to be consistent with Chapter 233 Signs of the Huntington Beach Zoning and Subdivision Ordinance.

The city's requirements for landscaping and screening of outdoor facilities and mechanical equipment are discussed in the **Visual Resources** section of the PSA. At this time, consistency with the city's landscaping and screening requirements is undetermined. Project consistency will be determined based on further analysis and conditions of certification that may be proposed in the **Visual Resources** section of the FSA to screen and enhance public views of the HBEP.

But for the exclusive jurisdiction of the Energy Commission to license the HBEP, Huntington Beach would need to make the following findings to approve the conditional use permit, variance, and coastal development permit. Additional discussion is provided in italics below each required finding.

<u>Variance Findings:</u>

1. The granting of a variance will not constitute a grant of special privilege inconsistent with limitations upon other properties in the vicinity and under an identical zone classification.

   Granting the variance would constitute a grant of a special privilege inconsistent with limitations upon other properties in the vicinity and under the PS zone classification.

2. Because of special circumstances applicable to the subject property, including size, shape, topography, location or surroundings, the strict application of the zoning ordinance is found to deprive the subject property of privileges enjoyed by other properties in the vicinity and under identical zone classification.

   The need to construct structures that exceed the maximum allowable height limit of the PS zone is a result of the use and the technologies employed, rather than special circumstances applicable to the subject property, such as size, shape, topography, location or surroundings.

3. The granting of a variance is necessary to preserve the enjoyment of one or more substantial property rights.

   With the exception of exceeding maximum allowable height, the proposed HBEP is otherwise consistent with the city's land use designations and zoning and would not constitute a change in the current development pattern of the city, as established by the city's adopted General Plan. The HBEP would be located entirely within the site of the existing Huntington Beach Generation Station. The property has been used since the late 1950s for the purpose of electrical power *generation. The project represents continued use of a site committed to ensuring reliable generation is maintained at an electrical system location critical to southern California.*

4. The granting of the variance will not be materially detrimental to the public welfare or injurious to property in the same zone classification and is consistent with the General Plan.

   Energy Commission staff is working with city staff and the applicant to develop screening and design enhancements that would improve the visual characteristics of the proposed project; staff will include the results in the ***Visual Resources*** *section of the FSA.*

   At this time, staff cannot conclude if the granting of the variance would or would not be detrimental to the general welfare of persons working or residing in the vicinity, nor detrimental to the value of the property and improvements in the neighborhood because with mitigation, the establishment, maintenance and operation of the project would not cause any significant unmitigated noise, hazardous materials, or traffic impacts to nearby land uses, nor would the project contribute substantially to any cumulative land use impacts. The FSA will provide conclusions for ***Air Quality, Public Health, and Visual Resources,*** *and staff will conclude whether the project meets the findings for a variance with respect to* ***Air Quality, Public Health, and Visual Resources****.*

The existing Huntington Beach Generation Station’s Units 1-4 are over 200 feet tall and, as such, are existing legal nonconforming structures. The city of Huntington Beach Zoning Code defines “alter” as, “To make a change in the exterior appearance or the supporting members of a structure, such as bearing walls, columns, beams, or girders, that will prolong the life of the structure.” The HBEP proposes to demolish the existing Huntington Beach Generation Station’s units to make way for the new HBEP Blocks 1 and 2; therefore, construction of the HBEP would not constitute alterations to the existing nonconforming structures, HBEP blocks 1 and 2 would be new construction subject to the development standards of the PS district and CZ overlay district.

The need to construct structures that exceed the maximum allowable height limit of the PS zone is a result of the use, rather than special circumstances applicable to the subject property. Section 241.10(C) of the zoning code states that failure to make all of the required findings for a conditional use permit or variance shall require denial of the application. Therefore, approval of the project would require an override of the maximum height requirement for the PS zone.

<u>Conditional Use Permit Findings:</u>

1. The establishment, maintenance and operation of the use will not be detrimental to the general welfare of persons working or residing in the vicinity nor detrimental to the value of the property and improvements in the neighborhood.

   Energy Commission staff is working with city staff and the applicant to develop screening and design enhancements that would improve the visual *characteristics of the proposed project; staff will include the results in the **Visual Resources** section of the FSA.*

*At this time, staff cannot determine whether the use would or would not be detrimental to the general welfare of persons working or residing in the vicinity nor detrimental to the value of the property and improvements in the neighborhood. The FSA will provide conclusions for **Air Quality, Public Health, and Visual Resources,** and staff will be able to conclude whether the project meets the conditional use permit findings with respect to **Air Quality, Public Health, and Visual Resources**.*

2. The granting of the conditional use permit will not adversely affect the General Plan.

   The HBEP project site is designated "Public" under the city of Huntington Beach General Plan. An energy facility (public utility, major utility, generating plant) is an allowed use in the "Public" general plan designation.

3. The proposed use will comply with the provisions of the base district and other applicable provisions in Title 20-25 and any specific conditions required for the proposed use in the district in which it would be located.

   The HBEP project site is designated "Public-Semipublic" in the Huntington Beach Zoning and Subdivision Ordinance. An energy facility is an allowed use in the "Public-Semipublic" zone. With the implementation of the proposed conditions of certification, the HBEP would conform to all applicable development requirements of the city of Huntington Beach Zoning and Subdivision Ordinance, except for the height requirements of the PS and CZ overlay zones.

<u>Coastal Development Permit Findings:</u>

1. Local Coastal Plan. That the development project, as proposed or as modified by conditions of approval, conforms with the General Plan, including the Local Coastal Program.

   The project site is designated within the Coastal and Land Use elements of the General Plan as Public (P). The Coastal Element identifies the existing land use of the site as a regionally serving electrical generating plant, in which Coastal Element policy provides for the use to continue (Coastal Element, p. IV-C-80). However, the General Plan calls for the protection and enhancement of the city's public coastal views upon redevelopment of the site. Energy Commission staff is working with city staff and the applicant to develop screening and design enhancements that would improve the visual characteristics of the proposed project; staff will include the results in the FSA. Staff anticipates Coastal Commission staff providing a more thorough project evaluation as part of their review of the PSA prior to completing their report on the project's consistency with the Coastal Act and the Local Coastal Plan.

2. Zoning Provisions. That the project is consistent with the requirements of the CZ Overlay District, the base zoning district, as well as other applicable provisions of the Municipal Code.

   As described above, the proposed project is consistent with development standards of the CZ Overlay District, the PS zone base zoning district, as well as other applicable provisions of the Municipal Code, with the exception of exceeding the maximum allowable height.

3. Adequate Services. That at the time of occupancy, the proposed development can be provided with infrastructure in a manner that is consistent with the Local Coastal Program.

   HBEP would reuse existing onsite potable water, natural gas, stormwater, process wastewater, and sanitary pipelines and electrical transmission facilities. See the ***Project Description*** *section of this staff assessment for specific infrastructure details.*

4. California Coastal Act: That the development conforms with the public access and public recreation policies of Chapter 3 of the California Coastal Act.

   The HBEP would be located entirely within the site of the existing Huntington Beach Generation Station. The Huntington State Beach provides two miles of existing public access to the coast and is located to the southwest of the project site across the Pacific Coast Highway. An additional 3.5 miles of city beach with public access continues north of the state beach. Staff will continue to work with the city of Huntington Beach and the Coastal Commission to determine whether adequate access exists or if the project would be required to provide additional access.

Southeast Coastal Redevelopment Plan

The proposed HBEP is within the project area of the Southeast Coastal Redevelopment Plan. The plan was prepared by the Huntington Beach Redevelopment Agency to establish a process and framework for the agency to implement the plan's goals. The plan includes the goal to assist with screening, design, or environmental improvements to mitigate impacts on adjoining neighborhoods and environmentally sensitive areas associated with modernization and reconstruction of the AES power generating plant. As required by Assembly Bill (AB) 1X 26, the city's redevelopment agency was dissolved in early 2012, with the city being designated as the successor agency and the Huntington Beach Housing Authority as the successor agency for housing-related items. Under AB 1X 26, the redevelopment agency can only make payments that are on the approved Enforceable Obligation Payment Schedule (EOPS) and the Recognized Obligation Payment Schedule (ROPS). Improvements to the HBEP site are not included on the EOPS or ROPS. While no redevelopment funds would be available for the city to contribute to screening, design, and environmental improvements at the site, Energy Commission staff is working with city staff and the applicant to develop screening and design enhancements that would improve the visual characteristics of the proposed project; staff will include the results in the FSA. Additional discussion of applicable city policies regarding screening and design improvements are included in the **Visual Resources** section of Part A of the PSA.

Laydown Area

Staging for HBEP construction would include the use of sixteen acres of vacant land at the AES Alamitos Generation Station (AGS) in the city of Long Beach for off-site construction laydown. The laydown area at AGS would be located in an area designated as Mixed Use District in the city of Long Beach General Plan Land Use Element and within the South East Area Development and Improvement Plan (SEADIP) specific plan. Within the SEADIP, the project's offsite construction laydown area and surrounding parcels are located in Subarea 19, which allows for and is currently developed with industrial uses. The activities related to HBEP construction at AGS would be limited to outdoor component storage only. No construction or assembly of equipment would take place at AGS. The offsite construction laydown area will be ancillary to the existing industrial use at AGS which is an allowable use within Subarea 19. For a detailed discussion of the heavy haul routes and equipment staging process see the **Traffic and Transportation** section of this staff assessment.

COMPLIANCE WITH LORS

Staff's independent analysis of the HBEP concludes that the project would comply with all applicable LORS, with the exception of the maximum allowable height requirement. Also, while staff believes that the project would likely conform to the California Coastal Act and city of Huntington Beach LCP, staff has not yet received the review and proposed findings of the Coastal Commission. **Land Use Table 3** summarizes the HBEP project conformance with applicable LORS.

Land Use Table 3
LORS Applicable to the Land Use Analysis

Applicable LORS	Description	Consistency Determination	Basis for Consistency
State			
California Subdivision Map Act	Governs the creation, recognition, consolidation/reconfiguration, adjustment and elimination of parcels on land within California.	Yes	Proposed Condition of Certification **LAND-1** would ensure that a Lot Line Adjustment is obtained prior to construction.
California Coastal Act	Establishes a comprehensive approach to govern land use planning along the entire California coast.	Pending	The Coastal Commission has received data responses from the applicant addressing their questions and staff anticipates Coastal Commission staff providing a more thorough project evaluation as part of their review of the PSA prior to completing their report on the project's consistency with the Coastal Act and the Local Coastal Plan.

Applicable LORS	Description	Consistency Determination	Basis for Consistency
Local			
City of Huntington Beach General Plan	Provides comprehensive, long-range plans, policies, and goals to guide the physical development of the city.	Yes	The project site is designated Public (P). Utilities are an allowed use.
Land Use Element Goal LU-2 Policy LU 2.1.2	Ensure that Development is adequately served by transportation infrastructure, utility infrastructure, and public services. Require that the type, amount, and location of development be correlated with the provision of adequate supporting infrastructure and services	Yes	The project would generate electric power for use by local communities. The project is proposed within an existing electrical power facility site served by infrastructure and services adequate to support additional development.
Goal LU-7 Policy LU 7.1.1	Achieve a diversity of land uses that sustain the city's economic viability, while maintaining the city's environmental resources and scale and character. Accommodate existing uses and new development in accordance with the Land Use and Density Schedules.	Yes	The project use is consistent with the Public designation as identified in the Land Use and Density Schedules.
Goal LU-13 Objective LU 13.1 Policy 13.1.1	Achieve the development of a mix of governmental service, institutional, educational, and religious uses that support the needs of Huntington Beach residents. Provide for the continuation of existing and development of new uses, such as governmental administrative, public safety, human service, cultural, educational, infrastructure, religious, and other uses that support the needs of existing and future residents and businesses. Allow for the continuation of existing public and private institutional, cultural, educational, and health uses at their present locations and development of new uses in areas designated on the Land Use Plan Map in accordance with Policy LU 7.1.1.	Yes	The project would develop and operate new power generators within the site of an existing facility, and provide electrical service for existing and future residents and businesses.
Coastal Element Goal C1	Develop a land use plan for the Coastal Zone that protects and enhances coastal resources, promotes public access and	Pending	The project would be developed within an existing electrical generating facility and would not result in a

Applicable LORS	Description	Consistency Determination	Basis for Consistency
Objective C 1.1 Policy C 1.1.1 Objective C 1.2 Policy 1.2.1	balances development with facility needs. Ensure that adverse impacts associated with coastal zone development are mitigated or minimized to the greatest extent feasible. With the exception of hazardous industrial development, new development shall be encouraged to be located within, contiguous or in close proximity to, existing developed areas able to accommodate it or, where such areas with adequate public services, and where it will not have significant adverse effects, either individually or cumulatively, on coastal resources. Provide a land use plan that balances location, type and amount of land use with infrastructure needs. Accommodate existing uses and new development in accordance with the Coastal Element Land Use Plan and the Development Density Schedule Table C-1.		change in land use that adversely affects coastal resources. Energy Commission staff is working with city staff and the applicant to develop screening and design enhancements that would improve the visual characteristics of the proposed project. The proposed conditions of certification would ensure that adverse impacts associated with the project are mitigated or minimized to the greatest extent feasible. The Coastal Element Land Use Plan and Development Density Schedule Table C-1, designates the project site Public (P). The Coastal Element describes the existing project site as a regionally serving electrical generating plant and provides for the use to continue.
Goal C8 Objective C 8.2 Policy C 8.2.4	Accommodate energy facilities with the intent to promote beneficial effects while mitigating any potential adverse impacts. Encourage the production of energy resources as efficiently as possible with minimal adverse impacts. Accommodate coastal dependent energy facilities within the Coastal Zone consistent with Sections 30260 through 30264 of the Coastal Act.	Yes	The existing Huntington Beach Generation Station is defined as a coastal-dependent energy facility within the city of Huntington Beach. Based on the priority of the city of Huntington Beach's Local Coastal Plan to redevelop existing industrial parcels in the coastal zone rather than establishing new industrial parcels in the coastal zone, the repowering of the existing Huntington Beach Generation Station through the implementation of the HBEP is consistent with the Local Coastal Plan as it will reuse and connect to existing industrial infrastructure, including the: existing SCE switchyard, existing Southern California Gas Company high

Applicable LORS	Description	Consistency Determination	Basis for Consistency
			pressure natural gas pipeline, existing city of Huntington Beach potable water and sanitary sewer pipelines, and the existing Huntington Beach Generation Station's ocean outfall for discharge of storm water and process water.
City of Huntington Beach Zoning Ordinance 214.06 PS District: Land Use Controls 214.08 PS District Development Standards	The PS Public-Semipublic District is established by this chapter. Prescribes development standards for the PS district.	Yes No	Major utility uses are allowed in the PS district on approval of a conditional use permit. The project has been designed to meet all of the required development standards of the PS district, except for the maximum height requirement of 50 feet with an additional 10 feet for mechanical appurtenances. The proposed height of the stacks would be 120 feet tall.
221.22 Buffer Requirements	Requires a 100 foot buffer from environmentally sensitive habitats identified in the LCP.	Yes	The project has been designed to comply with the 100 foot buffer.
City of Long Beach General Plan Land Use Element	The AGS is included within the SEADIP area.	Yes	The offsite laydown area is located in Subarea 19 of the SEADIP area, which allows for industrial use.
City of Long Beach Zoning Code	The AGS is zone PD-1 (Planned Development) SEADIP	Yes	The temporary offsite construction laydown area will be consistent with the city's zoning regulation, and is an allowable use within Subarea 19.

LAND USE COMPATIBILITY

The proposed project would be located entirely within the site of the existing Huntington Beach Generation Station. The property has been used since the late 1950s for the purpose of electrical power generation. The project represents continued use of a site committed to ensuring reliable generation is maintained at an electrical system location critical to southern California. The proposed HBEP is consistent with the city's land use designations and zoning and would not constitute a change in the current development pattern of the city, as established by the city's adopted General Plan. Furthermore, the project is compatible with the existing ancillary facilities of the Huntington Beach Generation Station which would be reused to support HBEP such as the Southern California Gas Company (SoCalGas) natural gas pipeline serving the site, the existing onsite SCE 230-kV switchyard, and the existing connections to the city of Huntington Beach potable water system and sanitary sewer system.

When a jurisdictional authority, such as the city of Huntington Beach, establishes zoning designations to implement its general plan, it is that agency's responsibility to ensure the compatibility of adjacent zoning and permitted uses and incorporate conditions and restrictions that ensure those uses will not result in a significant adverse impact to surrounding properties. As noted in the discussion above under the section titled **Physical Disruption or Division of an Established Community** and in **Land Use Table 3,** development of the proposed project and its associated facilities would not divide an established community.

A project may generate a potential significant environmental impact related to land use if it would introduce an unmitigated noise, odor, public health or safety hazard, visual, or adverse traffic affect on surrounding properties.

The siting of the proposed project at the existing location would not create significant adverse impacts in the following areas: **Noise and Vibration, Hazardous Materials Management, and Traffic and Transportation**. Please refer to those sections in Part A of the PSA for the detailed analyses of the noise, hazardous materials, and traffic impacts on surrounding occupants. Staff analysis of impacts in **Air Quality** and **Public Health** is not complete and will be provided in Part B of the PSA.

Consistency with the applicable LORS addressed in the **Visual Resources** section of Part A of the PSA is undetermined at this time. Energy Commission staff is working with city staff and the applicant to develop screening and design enhancements that would improve the visual characteristics of the proposed project. Please refer to the **Visual Resources** section in Part A of the PSA for information regarding potential impacts to visual resources.

Staff is not able to conclude that the proposed project would or would not result in any physical land use incompatibilities with the existing surrounding land uses until the **Air Quality** and **Public Health** sections are completed and the **Visual Resources** analysis has determined LORS consistency. Staff will have conclusions of the project's compatibility with existing and surrounding land uses in the FSA.

CUMMULATIVE IMPACTS

A project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (Cal. Code Regs.§15065(a)(3).

The cumulative land use and planning analysis considers past, current and probable future projects that are relatively near the proposed project that would contribute to cumulative impacts by impacting agricultural or forest lands, disrupt or divide an established community, conflict with applicable land use plans, policy or regulation, or conflict with an applicable habitat conservation plan or natural community conservation plan.

Land Use Table 4 (below) displays the reasonably foreseeable significant sized development projects within approximately one mile of the project site in the city of

Huntington Beach.

Land Use Table 4
Cumulative Projects

Project Title	Location	Project Description	Status of Project
Demolition of retired HBGS generating units	HBGS facility, 21730 Newland St, Huntington Beach	Units 3 & 4 of existing HBGS are slated for demolition in 2016.	Pending current project approval.
Poseidon Desalination Plant	HBGS facility, 21730 Newland St, Huntington Beach	Seawater intake pretreatment facilities	Approved by city in 2006. Permits are currently being secured. Waiting for Coastal Commission action. Construction estimated from Summer 2014 to Summer 2017.
Newland Street Residential (Pacific Shores)	West of Newland St, south of Lamond Dr, north of Hamilton, Huntington Beach	204 multi-family residential units and 2 acre park	Completed
Ascon Landfill Site	Ascon Landfill, Southwest corner of Magnolia St and Hamilton Ave, Huntington Beach	Industrial and oil field waste removal from defunct landfill	On-going project
The Strand	155 5th Street, Huntington Beach	Hotel, retail, restaurants, and parking	Completed and opened May 16, 2009
Pierside Pavilion Expansion	300 Pacific Coast Hwy, Huntington Beach	Expansion of the existing Pierside Pavilion development	Approved by Huntington Beach City Council Sept. 2012
Pacific City	21002 Pacific Coast Highway, Huntington Beach	31-acre site broken into 3 parcels. One for 516 residential apartments and two for commercial, retail and hotel (250-room, 8-story)	Entitlements approved 2004. Pending building permits.
Hilton Waterfront Beach Resort Expansion	21100 Pacific Coast Hwy, Huntington Beach	Expansion of existing resort, including a nine-story tower providing a total of 156 new guestrooms	Approved by Planning Commission in March 2012. Construction to start in 2014, six month construction period
Newland Street Widening	Newland Street, Huntington Beach	Street widening	Completed
P2-92 Sludge Dewatering and Odor Control	Brookhurst St and PCH, and Huntington State Beach and Santa Ana River	Construction of facilities to replace existing sludge dewatering system and associated odor control ventilation system in Plant 2.	No planned date for construction

Source: Huntington Beach Energy Project AFC Figure 5.6-5

CUMULATIVE IMPACTS ANALYSIS

The following land use areas have been analyzed with regard to cumulative land use impacts.

Agriculture and Forest

The project as proposed does not have any impacts to agricultural or forest lands or conflict with any land that is zoned for agricultural purposes and therefore, does not contribute to cumulative impacts related to this land use area.

Physical Disruption or Division of an Established Community

Because the HBEP would be located entirely within the existing Huntington Beach Generation Station site and would not physically disrupt or divide an established community, it would not contribute to a cumulative impact in this land use area.

Conflict with Any Applicable Habitat or Natural Community Conservation Plan

The HBEP does not conflict with any habitat or natural community conservation plans and will not contribute to any cumulative impacts in this land use area.

Conflict with Any Applicable Land Use Plan, Policy or Regulation

Staff's analysis of the information available shows that except for the height of the structures, the project would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction, with the inclusion of the proposed conditions of certification.

The Coastal Commission is currently reviewing the project's conformity to relevant provisions of the California Coastal Act and the certified LCP. Coastal Commission staff has identified several issues that they believe may be of concern and staff anticipates Coastal Commission staff providing a more thorough project evaluation as part of their review of the PSA. Staff will continue to work with the Coastal Commission on HBEP conformity with the California Coastal Act and LCP.

With the exception of the HBEP's conformity with the California Coastal Act and LCP, staff concludes that the HBEP would not result in cumulative impacts in this land use area.

NOTEWORTHY PUBLIC BENEFITS

There are no land use-related benefits associated with the HBEP.

RESPONSE TO PUBLIC AND AGENCY COMMENTS

As of the publication of the PSA, staff has not received any public comments regarding land use issues. Staff solicited comments from the city of Huntington Beach and the Coastal Commission regarding LORS compliance and measures that would be required of the project by these agencies but for the exclusive jurisdiction of the Energy Commission; their comments are included in this analysis.

CONCLUSIONS AND RECOMMENDATIONS

The proposed HBEP would be located entirely within the existing Huntington Beach Generation Station, an operating power plant site, in the city of Huntington Beach.

Staff concludes the HBEP:

- Would not convert any farmland (as classified by the Farmland Mapping and Monitoring Program) to non-agricultural use, conflict with existing agricultural zoning or Williamson Act contracts or convert forest land to non-forest use.
- Would not conflict with existing zoning for agricultural use or a Williamson Act contract.
- Would not conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production.
- Would not result in the loss of forest land or conversion of forest land to non-forest use.
- Would not directly or indirectly divide an established community or disrupt an existing or recently approved land use.
- Would not be consistent with the maximum allowable height limit within the PS zone and CZ overlay district of the city of Huntington Beach Zoning Code.
- With the exception of exceeding the maximum allowable height, would be consistent with development standards of the CZ Overlay District, the PS zone base zoning district, as well as other applicable provisions of the Municipal Code.
- Conformity with the California Coastal Act and city of Huntington Beach Local Coastal Program (LCP) has not been established. Staff will continue to work with the California Coastal Commission on conformity issues.
- Staff is not able to conclude that the proposed project would or would not result in any physical land use incompatibilities with the existing surrounding land uses until the **Air Quality** and **Public Health** sections are completed and the **Visual Resources** analysis has determined LORS consistency. Staff will have conclusions of the project's compatibility with existing surrounding land uses in the FSA.
- Would not conflict with any applicable habitat conservation plan or natural community conservation plan.
- Would not result in incremental impacts that, although individually limited, are cumulatively considerable when viewed in connection with other project-related effects or the effects of past projects, other current projects, and probable future projects.

PROPOSED FINDINGS OF FACT

Based on the evidence, staff makes the following findings:

1. The HBEP site is designated "Public" under the city of Huntington Beach General Plan and "Public-Semipublic" in the Huntington Beach Zoning and Subdivision Ordinance.

2. An energy facility (public utility, major utility, generating plant) is an allowed use in the "Public" general plan designation and the “Public-Semipublic” zone. But for the exclusive jurisdiction of the Energy Commission, the project would be subject to approval of a Conditional Use Permit, a Coastal Development Permit, and a Variance by the city of Huntington Beach.

PROPOSED CONDITION OF CERTIFICATION

LAND-1 The project owner shall comply with the Subdivision Map Act (Pub. Resources Code §§ 66410-66499.58) by adhering to the provisions of Title 25, Subdivisions, city of Huntington Beach Zoning and Subdivision Ordinance to ensure legality of parcels.

Verification: At least 30 days prior to construction of the first power block, the project owner shall submit evidence to the compliance project manager (CPM), indicating approval of a Lot Line Adjustment by the city of Huntington Beach, establishing a single parcel for the 28.6 acre HBEP site. The submittal to the CPM shall include evidence of compliance with all conditions and requirements associated with the approval of the Lot Line Adjustment by the city.

REFERENCES

HBEP 2012a – AES Southland Development, LLC / Stephen O'Kane (tn 66003). *Application for Certification (AFC), Volume I & II, dated, June 27, 2012*. Submitted to CEC/ Dockets on June 27, 2012.

HBEP 2012n – Stoel Rives LLP / Melissa A. Foster (tn 68366). *Applicant's Responses to Staff's Data Requests, Set 1A (#1-72), dated, November 2, 2012.* Submitted to CEC/ Dockets on November 2, 2012.

HBEP 2013m – CH2MHILL / Robert Mason (tn 69878). *AES Response to Staff Query-Use and Number of Stories for Specific HBEP Building, dated March 8, 2013.* Submitted to CEC/ Dockets on March 8, 2013.

CCC 2012a – California Coastal Commission/ Tom Luster (tn 66483). *CA Coastal Commission's Comments on Data Adequacy Review for AFC, dated August 3, 2012.* Submitted to CEC/ Dockets on August 3, 2012.

CDOC 2010 – California Department of Conservation, Farmland Mapping and Monitoring Program, website accessed on December 20, 2012: http://www.conservation.ca.gov/dlrp/FMMP/Pages/Index.aspx

CHB 1996 – City of Huntington Beach General Plan, Community Development Chapter, Land Use Element, Updated 1996, http://www.huntingtonbeachca.gov/files/users/planning/land_use_element.pdf

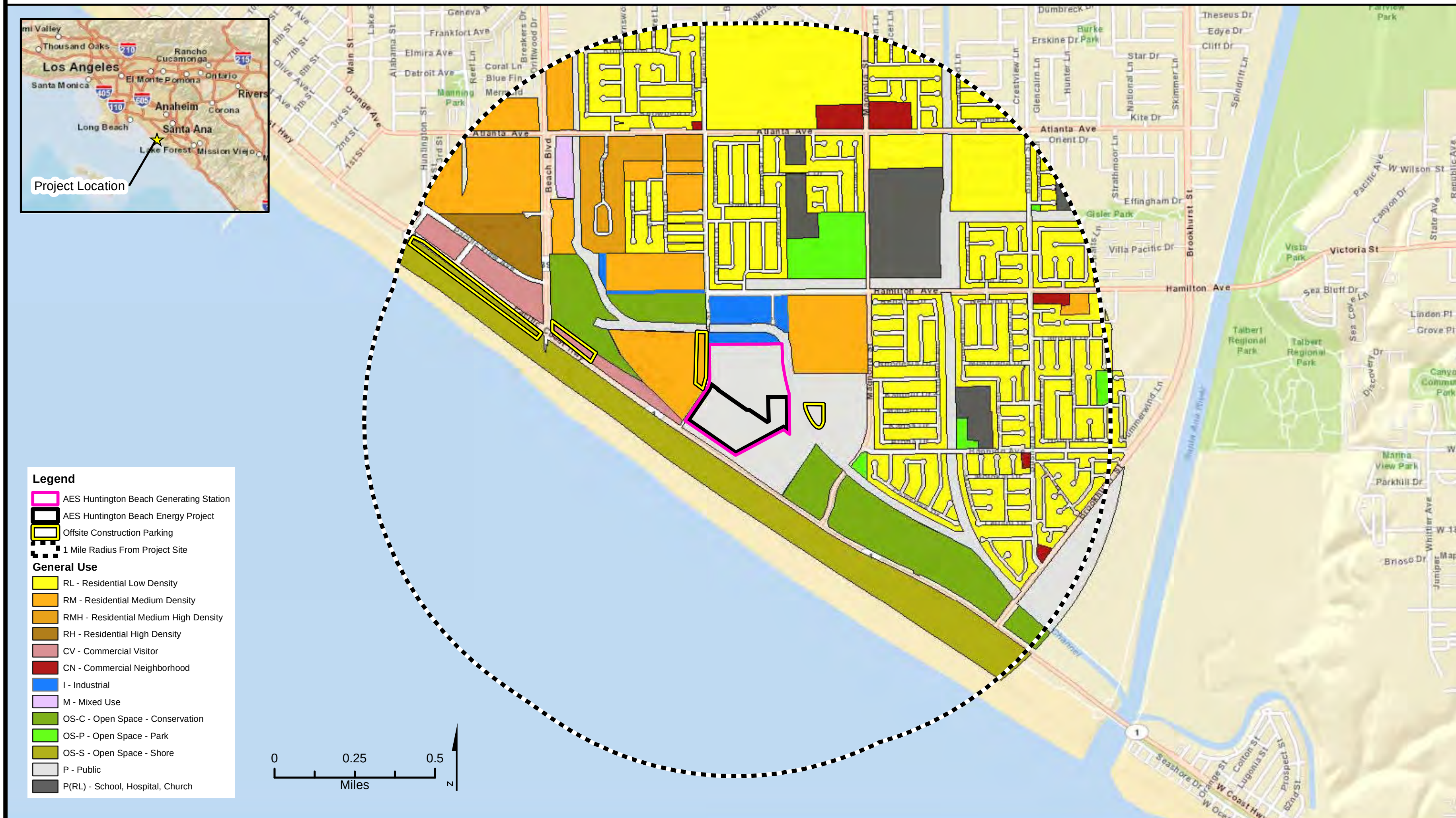
CHB 2001 – City of Huntington Beach General Plan, Natural Resources Chapter, Coastal Element, Updated 2001 – Amended 2011, http://www.huntingtonbeachca.gov/government/departments/Planning/gp/coastal element.cfm

CHB 2012a – City of Huntington Beach / Dept of Planning & Building / Aaron Klemm / Jane James (tn 68804). *City of Huntington Beach Comments on the Huntington Beach Energy Project, dated December 6, 2012*. Submitted to CEC/ Dockets on December 7, 2012.

CHB 2012z – City of Huntington Beach Zoning and Subdivision Ordinance. December 20, 2012. http://www.huntingtonbeachca.gov/government/Elected_Officials/city_clerk/Zoning_Code/

LAND USE - FIGURE 1

Huntington Beach Energy Project - Land Use Designations

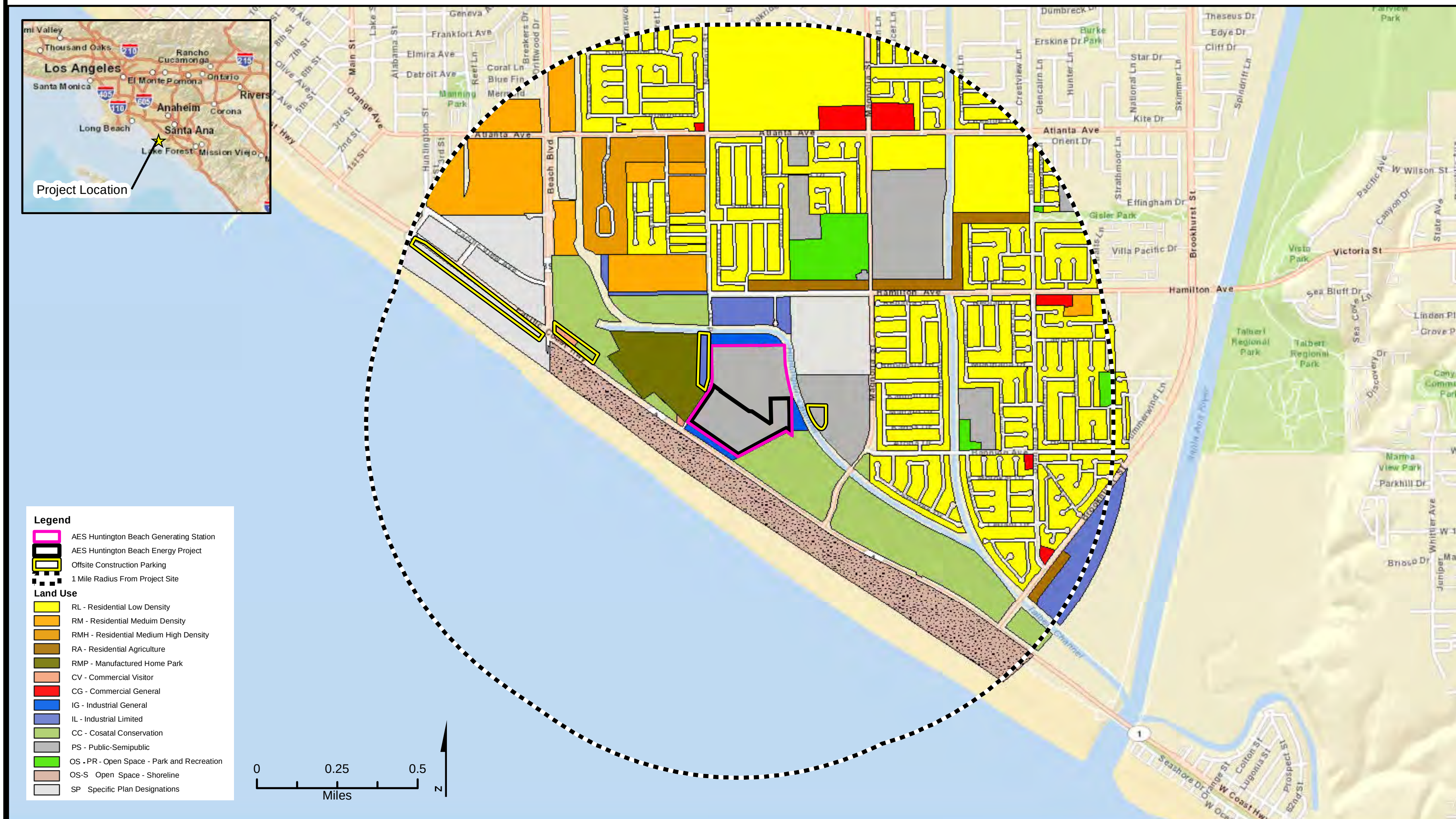


LAND USE

SOURCE: AFC, Figure 5.6 - 2

LAND USE - FIGURE 2

Huntington Beach Energy Project - Zoning and Subdivision Ordinance



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC, Figure 5.6 - 3

NOISE AND VIBRATION

Edward Brady and Shahab Khoshmashrab

SUMMARY OF CONCLUSIONS

Staff has analyzed the proposed project and modeled data furnished by the applicant and concludes that the selected operational conditions proposed for the Huntington Beach Energy Project (HBEP) do not fully comply with the laws, ordinances, regulations and standards (LORS) requirements and California Environmental Quality Act (CEQA) guidelines. Staff recommends that additional conditions be implemented to ameliorate special conditions due to the extended eight-year construction schedule (**NOISE-6**), and the additional traffic loading on adjacent residential neighborhoods (**NOISE-8**) during this period as means to bringing noise levels into compliance. In addition, staff recommends conditions covering complaint resolution (**NOISE-1** and **NOISE-2**), worker and employee protection (**NOISE-3, NOISE-5**), and on-site construction activities (**NOISE- 6, NOISE-7 and NOISE-9**).

In addition to the “practice in care” policy outlined in **NOISE-8**, a sound wall along the western edge of the parking lot immediately east of the Mobile Home Park as shown on **Noise Figure 1** would further mitigate the noise generated by workers activities in this lot. This lot is privately-owned. Because the Energy Commission does not have an enforcement authority over privately-owned lands that are outside of its permitting jurisdiction, the installation of this wall would have to be contingent upon a mutual agreement between the parking lot property owner and the project owner. Staff, therefore, requests that the applicant evaluate the feasibility of this mitigation measure and provide input to staff in this regard prior to staff’s preparation of the Final Staff Assessment (FSA).

If built and operated in conformance with the proposed conditions of certification, staff believes that the Huntington Beach Energy Project would comply with all applicable noise and vibration LORS. Staff concludes that the project would produce no significant direct or cumulative adverse noise impacts under CEQA guidelines on people within the project area, including the minority populations, directly, indirectly, or cumulatively. Staff concludes that conditions requiring ongoing measurement, feedback and resolution, particularly those under **NOISE-4,** would serve to meld the newly configured power facility with nearby residential neighborhoods and public access areas.

INTRODUCTION

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

The purpose of this analysis is to identify and examine the likely noise and vibration impacts from the construction and operation of the HBEP project. Staff recommends procedures to ensure that the resulting noise and vibration impacts would be adequately mitigated to comply with applicable laws, ordinances, regulations and standards (LORS) and to lessen the impacts to less than significant. For an explanation of technical terms used in this section, please refer to **Noise Appendix A**, immediately following.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Noise Table 1
Laws, Ordinances, Regulations and Standards

<table>
<tr><th>Applicable Law</th><th>Description</th></tr>
<tr><td><u>Federal</u>:
Occupational Safety & Health Act (OSHA): 29 U.S.C. § 651 et seq

U.S. Environmental Protection Agency (USEPA)</td><td>Protects workers from the effects of occupational noise exposure.

Assists state and local government entities in development of state and local LORS for noise.</td></tr>
<tr><td><u>State:</u>
California Occupational Safety & Health Act (Cal-OSHA): 29 U.S.C. § 651 et seq., California Code of Regulations, Title 8, §§ 5095-5099</td><td>Protects workers from the effects of occupational noise exposure.</td></tr>
<tr><td><u>Local:</u>
City of Huntington Beach Municipal Code, Noise Ordinance, Chapter 8.40, Noise Control</td><td>Prohibits construction between 8 p.m. and 7 a.m. on Mondays through Saturdays and all day Sundays and federal holidays

Provides the following noise limits for exterior locations.
<table>
<tr><th colspan="3">Exterior Noise Standards (CNEL[1])</th></tr>
<tr><th>Noise Zone</th><th>Noise Level (dBA)</th><th>Time Period</th></tr>
<tr><td>1 Residential</td><td>55
50</td><td>7 am – 10 pm
10 pm – 7 am</td></tr>
<tr><td>2 Office</td><td>55</td><td>Anytime</td></tr>
<tr><td>3 Commercial</td><td>60</td><td>Anytime</td></tr>
<tr><td>4 Industrial</td><td>70</td><td>Anytime</td></tr>
</table></td></tr>
<tr><td>City of Huntington Beach General Plan, Noise Element</td><td>Establishes goals, objectives, and policies that address noise issues within the City's jurisdiction</td></tr>
</table>

[1] see **NOISE APPENDIX A** for the definition of the CNEL metric

FEDERAL

Under the Occupational Safety and Health Act of 1970 (OSHA) (29 U.S.C. § 651 et seq.), the Department of Labor, Occupational Safety and Health Administration, (OSHA) adopted regulations (29 C.F.R. § 1910.95) designed to protect workers against the effects of occupational noise exposure. These regulations list permissible noise exposure levels as a function of the amount of time during which the worker is exposed (see **Noise Appendix A, Table A4**, immediately following this section). The regulations further specify a hearing protection program that involves monitoring the noise to which workers are exposed, assuring that workers are made aware of overexposure to noise, and periodically testing the workers' hearing to detect any degradation.

Guidelines are available from the U.S. Environmental Protection Agency (USEPA) to assist state and local government entities in developing state and local LORS for noise. Because there are existing local LORS that apply to this project, the USEPA guidelines are not applicable.

There are no federal laws governing off-site (community) noise.

The Federal Transit Administration (FTA) has published guidelines for assessing the impacts of ground-borne vibration associated with construction of rail projects, which have been applied by other jurisdictions to other types of projects. The FTA-recommended vibration standards are expressed in terms of the "vibration level," which is calculated from the peak particle velocity measured from ground-borne vibration. The FTA measure of the threshold of perception is 65 vibrational decibels (VdB), which correlates to a peak particle velocity of about 0.002 inches per second (in/sec). The FTA measure of the threshold of architectural damage for conventional sensitive structures is 100 VdB, which correlates to a peak particle velocity of about 0.2 in/sec.

STATE

California Government Code Section 65302(f) encourages each local governmental entity to perform noise studies and implement a noise element as part of its general plan. In addition, the California Office of Planning and Research has published guidelines for preparing noise elements, which include recommendations for evaluating the compatibility of various land uses as a function of community noise exposure.

The State of California, Office of Noise Control, prepared the Model Community Noise Control Ordinance, which provides guidance for acceptable noise levels in the absence of local noise standards. This model also defines a simple tone, or "pure tone," as one-third octave band sound pressure levels that can be used to determine whether a noise source contains annoying tonal components. The Model Community Noise Control Ordinance further recommends that when a pure tone is present the applicable noise standard should be lowered (made more stringent) by five A-weighted decibels (dBA).

The California Occupational Safety and Health Administration (Cal-OSHA) has promulgated occupational noise exposure regulations (California Code of Regulations, Title 8, §§ 5095-5099) that set employee noise exposure limits. These standards are equivalent to federal OSHA standards (see **Noise Appendix A, Table A4**).

LOCAL

City of Huntington Beach LORS

The project is located within the city limits of Huntington Beach, an incorporated city within Orange County. The city of Huntington Beach Noise Ordinance 8.40 of the Municipal Code (City of Huntington Beach 2012) applies to this project.

The city of Huntington Beach establishes noise compatibility guidelines in the Noise Element for Huntington Beach (City of Huntington Beach 1996). These guidelines are used to evaluate the noise impacts from new projects to determine compliance with local noise LORS. Land use categories and their corresponding maximum allowable noise exposure levels (in terms of L_{DN}) can be found in the Goals, Objectives, and Policies section of the Huntington Beach Noise Element and partially summarized in **Noise Table 2** below. (See **NOISE APPENDIX A** for the definition of the L_{DN} Metric.) The Noise Element principally outlines prescribed mitigation measures.

Noise Table 2
City of Huntington Beach Noise Element

Goal	Objective	Policies	Description	Limit
N1 Adopt/ Enforce LORS	N1.2 Prevent/ Mitigate Noise	N1.2.1 "Sensitive" Use Impact	Maximum Interior noise levels for new residential, heath care, schools and religious (special uses) with exterior levels where L_{DN} > 60dBA.	45 dBA $\mathbf{L_{DN}}$ Interior
		N1.2.2 New Bldg. Design	Maximum exterior noise level created by new industrial and commercial uses.	65 dBA $\mathbf{L_{DN}}$ Exterior
		N1.2.3 Special Design	Maximum interior noise level where new uses create L_{DN} > 60dBA, requiring special design and construction.	45 dBA $\mathbf{L_{DN}}$ Interior
	N1.4 Minimize Exposure	N1.4.1. Vehicle Separation	Maximize distance between commercial or industrial vehicles and "noise sensitive" residential uses.	Maximize Distance
		N1.4.2 Residential Noise	Minimize noise impacts on residential parcels from adjacent commercial or industrial loading and shipping.	Shipping Activity Control
		N1.4.3 Shielding Residential Uses	Commercial or industrial parking lots abutting residential areas buffered and shielded with walls, fences or landscaping	Buffer/ Shield Parking Lots
		N1.4.4 Impact On Adjacent	Commercial or industrial parking lots designed to minimize vehicle noise to adjacent land uses.	Control Vehicle Noise
		N1.4.5 Limit Hours Delivery	Limit hours of commercial and industrial truck deliveries on site and adjacent land uses.	Delivery Time Limits
	N1.6 Control Construct	N1.6.1 Limit Hours Construction	Regulate construction hours by enforcing existing and implementing noise ordinances.	Construct Time Limits
	N1.12 Analyze/ Mitigate	N1.12.1 Municipal Control	Ensure any approved land use having noise impact be adequately analyzed and mitigated.	Control Measures
		N1.12.2 Permit Control	Encourage stationary noise generating sources to reduce noise prior to renewing Conditional Use Permit	Permit Control

According to § 8.40.050 of the noise ordinance, the maximum exterior level that is considered acceptable for single family and mobile residential use, similar to those in the project area, is 55 dBA for daytime (7 am – 10 pm) and 50 dBA for nighttime (10 pm – 7 am). In addition, the city's Noise Ordinance, § 8.40.090(d) prohibits construction noise from 8 pm to 7 am on Mondays through Saturdays and all day Sundays and federal holidays. These restrictions apply to the project.

SETTING

The proposed HBEP project site would be located on a 28.6 acre site in a general use industrial area within Huntington Beach city limits at 21730 Newland Street. It would also be located within the existing AES Huntington Beach Generation Station. HBEP would be bounded on the west by a mobile home park, by a tank farm on the north, by the Huntington Channel and residential neighborhoods on the east, by Magnolia Marsh on the southeast, and by the Pacific Coast Highway on the southwest (HBEP 2012a, AFC §§ 2.0, 5.7.1). Magnolia Marsh is a part of the Huntington Beach Wetlands Preserve.

HBEP would replace existing Units 1 through 4 and the decommissioned Unit 5. Units 3 and 4 have been converted from electric power production to synchronous condenser service. The existing combined 904 MW (mega-Watt) capacity of Units 1 through 4 would be replaced by Power Blocks 1 and 2 (PB-1 and PB-2) with a total capacity of 939 MW. The demolition of Unit 5 and adjacent storage tanks would make room for PB-1. Finally, PB-2 would displace Units 1 and 2 and the converted Units 3 and 4 with their final decommissioning and demolition. The proposed construction would take place over an eight-year period due to the desire of the applicant to keep as much electrical generation capacity online and available as possible.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHODS AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires that significant environmental impacts be identified and either eliminated or mitigated to the extent feasible. Section XI of Appendix G of CEQA's guidelines (California Code of Regulations, Title 14, Appendix G) describes some characteristics that could signify a potentially significant impact. Specifically, a significant effect from noise may exist if a project would result in:

1. exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
2. exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels;
3. substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or

4. substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

The Energy Commission staff, in applying Item 3 above to the analysis of this and other projects, has concluded that a potential for a significant noise impact exists where the noise of the project plus the background exceeds the background by more than 5 dBA at the nearest sensitive receptor, including those receptors that represent the area's minority population.

Staff has concluded that an increase in background noise levels up to and including 5 dBA in a residential setting is insignificant; an increase of more than 10 dBA, however, is clearly significant. An increase of between 5 and 10 dBA should be considered adverse, but could be either significant or insignificant, depending upon the circumstances of a particular case.

Factors to be considered in determining the CEQA significance of an adverse impact as defined above include:

1. the resulting noise level[2];
2. the duration and frequency of the noise;
3. the number of people affected; and
4. the land use designation of the affected receptor sites.

Noise due to construction activities is usually considered to be less than significant in terms of CEQA compliance if:

- the construction activity is temporary; and
- the use of heavy equipment and noisy[3] activities is limited to daytime hours.

Staff uses the above method and threshold to protect the most sensitive populations, including the area's minority population. For purposes of evaluating impacts on residential uses, the project noise is compared with measured nighttime ambient noise levels, when residents are trying to sleep.

Ambient Noise Monitoring

In order to establish a baseline for the comparison of predicted project noise with existing ambient noise, the applicant has presented the results of two ambient noise surveys, a long-term survey taken on August 25-31, 2011 (HBEP 2012a, AFC § 5.7.3.2, App. 5.7A) and another long-term survey on September 19-21, 2012 (HBEP 2012u, Data Responses to Jason Pyle, Appendix B). These surveys were performed using acceptable equipment and techniques. The noise surveys monitored existing noise

[2] For example, a noise level of 40 dBA would be considered quiet in many locations. A noise limit of 40 dBA would be consistent with the recommendations of the California Model Community Noise Control Ordinance for rural environments and with industrial noise regulations adopted by European jurisdictions. If the project would create an increase in ambient noise no greater than 10 dBA, the project noise level would not be significant if the resulting noise level does not exceed 40 dBA.

[3] Noise that draws legitimate complaint. For definition of "legitimate complaint", see the footnote in Condition of Certification **NOISE-4.**

levels at the following seven locations, shown in **Noise Figure 1**. A summary of the results are outlined in **Noise Table 3** below:

Noise Table 3
Sensitive Receptor Summary

Receptor	Description	L_{eq}[4] dBA	L_{90}[5] dBA	Distance PB-1 (feet)	Distance PB-2 (feet)
M1	Gas Meter Station HB Generation Plant	N/A	63	1,500	500
M2	21851 Newland #48 Mobile Home Park	57 – Daytime 55 – Nighttime	55	1,500	800
M3	22011 Hula Circle Residence	56	40	1,850	2,500
M4	8512 Sandy Hook Dr Residence	56	41	2,700	2,200
M5	Wetlands Pier Magnolia Marsh		61	900	900
M6	Wetlands Back Magnolia Marsh		51	350	1,300
M7	Property Line North of 230kV Switchyard		57	1,750	1,250

DIRECT IMPACTS AND MITIGATION

Noise impacts associated with the project can be created by construction activities and normal operation of the project.

Construction Impacts and Mitigation

Construction noise is usually a temporary phenomenon (typical power plant construction lasts 1-2 years). Construction of the HBEP project is expected to be typical of similar projects in terms of equipment used and types of activities, but would have a longer than normal schedule of approximately 8 years (HBEP 2012a, AFC § 5.7.4.2). The 8-year construction of HBEP goes beyond what is normally considered temporary. Over the course of that time, various discrete activities would occur concurrently, creating a cumulative noise effect. Staff has identified that the phase when the demolition of existing Units 3 and 4 and the construction of PB-1 (Power Block 1) would occur in the two year period from 2016 to 2018 (Phase II) is the period when the noise levels are mostly likely to peak. See **Noise Table 4** below for project activities schedule.

[4] Average value provided in long term measurements dated August 25-28, 2011 (HBEP 2012a, AFC § 5.7.3.2, Table 5.7-5) and September 2012 (HBEP 2012u, Appendix A).

[5] Average of the 4-quiettest nighttime-hour measurements conducted in September 2012 summarized in Table DR PYLE 7-1 (Detailed on Figure DR PYLE 7-1) and the average of the 4-quietest nighttime-hour measurements conducted in August 2011 included in the AFC Appendix 5.7-A (for example, the average of 62 dBA and 48 dBA at M2=55).

Noise Table 4
Project Activities Schedule

Phase	I	II	III	IV
Unit 5/Tanks	Demo			
Unit 1 & 2				Demo
Unit 3 & 4		Demo		
PB-1		Construct		
PB-2			Construct	
Start Date	2014-Q4	2016-Q2	2018-Q2	2020-Q3

Compliance with LORS

Construction of an industrial facility such as a power plant is typically noisier than permissible under standard noise ordinances. In order to allow the construction of new facilities, construction noise during certain hours of the day is commonly exempt from enforcement by local ordinances. The applicable local noise LORS do not limit the loudness of construction noise, but staff compares the projected noise levels with ambient levels (please see the following discussion under **CEQA Impacts**).

The applicant commits to performing noisy construction work during the times specified in the City of Huntington Beach Noise Element (HBEP 2012a, AFC § 5.7.7.3.1). To ensure that this requirement is met, staff proposes Condition of Certification **NOISE-6**, which restricts construction to those times. Therefore, the noise impacts of the HBEP project construction activities would comply with the noise LORS.

CEQA Impacts

Since construction noise typically varies with time, it is most appropriately measured by, and compared with, the L_{eq} metric.

Staff has calculated the worst-case construction noise levels at the nearest residential receptors. They range between 57 and 64 dBA and are summarized below in **Noise Table 5**. These levels are from the loudest construction phase expected, when the schedules for the demolition of the existing Units 3 and 4 (on the southwestern portion of the site) and the construction of PB-1 (on the eastern portion of the site) would overlap (Phase II). During the other phases of construction, construction noise would be expected to be less. Staff has used this worst-case scenario to evaluate the construction impacts at the most noise-sensitive receptors.

Considering the long period of construction, as opposed to the temporary/short-term nature of a typical power plant construction, staff considers an increase of above 10 dBA at the HBEP's noise-sensitive receptors to be significant during the day, when construction would occur.

As seen in **Noise Table 5** below, the compounded construction noise of Units 3-4 demolition and PB-1 construction would increase noise levels at residential receptor M2 by 8 dBA, at M3 by 5 dBA, and at M4 by 4 dBA. The differential increases at all three locations would be less than significant (less than 10 dBA).

To ensure construction noise would not create annoyance, staff proposes Condition of Certification **NOISE-6**, which restricts construction to daytime and would require construction equipment and trucks to avoid generating excessive and unnecessary noise. Staff also proposes Condition of Certification **NOISE-8**, which requires a "practice in care" policy in the HBEP employee safety training program (see **Traffic Noise during Construction** below). The "practice in care" policy would require construction workers to avoid unnecessary blowing of car horns, revving engines, loud radios, tailgate meetings or any loud noise that would affect residents in the project area.

Noise Table 5
Predicted Construction Noise Levels

Receptor	Combined Construction Noise Level L_{eq} (dBA)[6]	Measured Ambient Avg. Daytime L_{eq} (dBA)[7]	Cumulative Noise Level (dBA)[8]	Change Noise Level (dBA)	Distance from Construction of PB-1 (feet)	Distance from Demolition of Units 3 & 4 (feet)
M2	64	57	65	+8	1,500	800
M3	58	54	59	+5	1,850	2,500
M4	57	56	60	+4	2,700	2,200

Note: See Noise Figure 1 for location.

Additionally, Condition of Certification **NOISE-9** requires pile driving be performed using a quieter process (see analysis below under **Vibration**). Furthermore, Condition of Certification **NOISE-7** requires that a silencer be installed on the steam blow piping to reduce steam blow noise (see analysis below under **Steam Blows**). Finally, staff proposes Conditions of Certification **NOISE-1** and **NOISE-2**, which would establish a public notification and noise complaint process to resolve any complaints regarding construction noise.

Examples of additional feasible mitigation measures are also listed in the City of Huntington Beach Noise Element (**Noise Table 2** and §§ I-N4 and I-N5 of the noise element), and the following:

- temporary and permanent noise barriers, such as a sound wall along the local street separating the affected receptors from the project site;
- reduction of speed limits; prohibition of "jake braking";
- replacement and updating of equipment to current attenuation standards;
- moveable task noise barriers;
- disbursement of truck queues to distribute idling noise;

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[6] Staff calculated the value using construction noise level of 70 dBA at 375 feet for the demolition of Units 3 and 4 and the construction of Power Block 1 as coincident events during Period II as shown in **Noise Table 4** above.

[7] Daytime L_{EQ} values derived from HBEP 2012a, Tables 5.7-2 through 5.7-4 and HBEP 2012u, Appendix A.

[8] Cumulative noise levels are the summation of Combined Construction Noise Levels in the second column of **Noise Table 5** and the Measured Ambient values in the third column.

- reducing the number of noisy construction activities (pile driving, heavy equipment, steam blow) occurring simultaneously; and
- conducting noisy stationary construction activities in acoustically engineered enclosures and/or relocating construction staging areas to maximize their distances to the nearest noise-sensitive receptors, such as the mobile homes represented by M2.

Linear Facilities

Linear facilities would include the existing 16-inch-diameter natural gas pipeline, an existing 8-inch-diameter supply water pipeline, and existing sewer and storm water pipelines. No new gas or water lines would be constructed. A new onsite electric transmission line would be constructed (HBEP 2012a, AFC §§ 2.1.1.1, 3.0, 4.0).

Construction of linear facilities typically moves along at a rapid pace, thus not subjecting any one receptor to noise impacts for more than two or three days. Further, construction activities would be limited to daytime hours. To ensure that these hours are, in fact, adhered to, in compliance with the LORS, staff proposes Condition of Certification **NOISE-6**.

Vibration

The only construction operation likely to produce vibration that could be perceived off site would be pile driving. The applicant anticipates that pile driving would be required for construction of the HBEP project (HBEP 2012a, AFC §§ 5.7.4.2.2, 5.7.4.3.4, Table 5.7-9).

Pile driving could be expected to reach 104 dBA at a distance of 50 feet. The noise level from pile driving at HBEP would thus range from 73-78 dBA at receptor M2, 70-73 dBA at M3, and 71-74 dBA at M4.[9] Assuming daytime noise levels of 57 dBA at M2 and 56 dBA at both M3 and M4, the increased noise range would be as high as 21 dBA at M2, 17 dBA at M3, and 18 dBA at M4. An increase of 17-21 dBA would likely constitute an annoyance. Pile driving using traditional techniques can potentially cause a significant noise impact at the nearest noise-sensitive receptors. Thus, staff recommends that pile driving be performed using a quieter process. Staff has identified several commercially available technologies that reduce pile driving noise by 20 to 40 dBA compared to traditional pile driving techniques. These include padded hammers, “Hush” noise-attenuating enclosures, vibratory drivers, and hydraulic techniques that press the piles into the ground instead of hammering them (Eaton 2000, Gill 1983, Ken-Jet, Kessler & Schomer 1980, NCT, WOMA 1999, Yap 1987).

To ensure that pile driving would be performed with quieter equipment, staff proposes Condition of Certification **NOISE-9**. Also to ensure that pile driving noise would not cause annoyance, pile driving would be limited to daytime hours. To ensure this, staff proposes Condition of Certification **NOISE-6**, below.

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[9] Range for noise levels at pile-driving locales calculated by staff, based on a sound power level 104 dBA at 50 feet. See **Noise Table 5** for measured ambient daytime L_{eq} at M2-M4.

Worker Effects

The applicant has acknowledged the need to protect construction workers from noise hazards and has recognized applicable LORS that would protect construction workers (HBEP 2012a, AFC §§ 5.7.4.2.3, 5.7.4.3.1, 5.7.7.1.2, 5.7.7.2.1). To ensure that construction workers are, in fact, adequately protected, staff proposes Condition of Certification **NOISE-3**.

Steam Blows

Typically, the loudest noise encountered during construction, inherent in building any project incorporating a steam turbine, is created by the steam blows. After erection and assembly of the feed water and steam systems, the piping and tubing that comprise the steam path have accumulated dirt, rust, scale, and construction debris such as weld spatter, dropped welding rods, and the like. If the plant were started up without thoroughly cleaning out these systems, all this debris would find its way into the steam turbine, quickly destroying the machine.

In order to prevent this, before the steam system is connected to the turbine, the steam line is temporarily routed to the atmosphere. Traditionally, high pressure steam is then raised in the boiler or a temporary boiler and allowed to escape to the atmosphere through the steam piping. This flushing action, referred to as a “high pressure steam blow”, is quite effective at cleaning out the steam system. A series of short steam blows, lasting two or three minutes each, are performed several times daily over a period of two or three weeks. At the end of this procedure, the steam lines are connected to the steam turbine, which is then ready for operation. Alternatively, high pressure compressed air can be substituted for steam.

High pressure steam blows, if un-silenced, can typically produce noise levels as high as 129 dBA at a distance of 50 feet; this would amount to a range of 96-103 dBA at M2, M3 and M4. Steam blows could be very disturbing at the nearest noise-sensitive receptors, depending on the frequency, duration, and noise intensity of venting. With a silencer installed on the steam blow piping, noise levels are commonly attenuated to 89 dBA at 50 feet; steam blow would amount to a range of 59-63 dBA at M2, M3 and M4 (staff calculation). Although in excess of the ambient levels, these levels are acceptable, because the impact is temporary and steam blows would occur during the day. Thus, staff proposes Condition of Certification **NOISE-7** (below) in order to limit steam blow noise to 89 dBA at 50 feet, and to limit this activity to daytime hours.

A quieter steam blow process, referred to as “low pressure steam blow” and marketed under names such as QuietBlow™ or Silentsteam™, has become popular. This method utilizes lower pressure steam over a continuous period of about 36 hours. Resulting noise levels reach about 86 dBA at 50 feet.

Traffic Noise during Construction

The number of vehicles required for material delivery and worker commute would increase the traffic on the roadway network around the project. The increased traffic is summarized in Table 5.12-7 of the AFC (HBEP 2012a, AFC § 5.12). With one exception, the average daily traffic (ADT) in the roadway network contiguous to the project site would increase by approximately 1 percent as a result of construction activities. The single exception is Newland Avenue between Adams and Indianapolis, where traffic volume would increase by approximately 6 percent.

The roadway network around HBEP is comprises surface streets with speed limits that are 45 mph or less. The most southerly element of this rectangular network is the State Route 1 Pacific Coast Highway (PCH) with a 41,000 ADT and a 50 mph speed limit (see **Noise Figure 1**). The northerly portion of this street network is Interstate 405 (San Diego Freeway), an elevated interstate, which connects to PCH with a north-south street grid, starting with Beach Boulevard in the west, followed by Newland, Magnolia and Brockhurst. North of the project site running west to east is Hamilton, followed by Atlanta, Indianapolis, Adams, Yorktown, Garfield, and Ellis, all with 45 mph speed limits. According to AFC Table 5.12-7, the current traffic densities near the project site range from 9,000 to 12,000 ADT, fed by Hamilton (17,000), and increase as you move north toward Interstate 405, where traffic increases to the 17,000-30,000 ADT range.

The additional traffic propagated by project construction activity would center on the 4.5 acres (430 stalls) of onsite and contiguous parking for project workers and deliveries to and from the 8 acres of lay-down area. The balance of parking would be provided by 485 public parking spaces along the PCH. Additional 16 acres at the AES Los Alamitos facility a few miles north along PCH would provide the balance of the lay-down area. The onsite lay-down and parking areas would be the terminus for project deliveries and the workers' morning commute. Assuming half of the ADT would occur at the beginning of the workday, the feeders for traffic would be:

- 221 vehicles turning into Newland Street from the PCH
- 110 vehicles feeding Newland Street from Hamilton
- 365 vehicles feeding from Interstate 405 via Newland Street
- 145 vehicles feeding from Beach Blvd. (State Route 39), extending south to the PCH or crossing to Newland Street at Atlanta (see **Noise Figure 1**)

As a result, Newland Street would act as the artery where the morning commute would terminate for project workers and daytime deliveries and the departing point for the evening homebound commute. The intersection of Newland and Hamilton would experience a considerable increase in traffic volume during the short period before the start of construction each day, prior to 7 a.m. Without proper mitigation, this may cause annoyance at the nearest homes, considering it would occur in early morning. However, the residential communities near this intersection have already received sound attenuation by means of existing sound walls along the sidewalk setbacks. The single story houses northeast of the intersection of Newland and Hamilton are protected with masonry sound walls approximately eight feet in height. The two-story residences northwest of this intersection have higher walls designed to protect the taller structures. Staff concludes that these existing masonry walls would provide adequate acoustical protection from the escalated traffic converging on the construction site.

The approximately 900-foot-long vacant lot immediately east of the mobile home park represented by M2 in **Noise Figure 1** has been designated by the applicant for 300 construction worker parking spaces and has no acoustical protection from the increased traffic density along Newland Street. Staff recommends, in Condition of Certification **NOISE-8**, preventative mitigation in the form of active workers consideration toward residents.

To mitigate the impact of traffic noise, **NOISE-8** requires a “practice in care” policy in the HBEP employee safety training program. The “practice in care” policy would require construction workers to avoid unnecessary blowing of car horns, revving engines, loud radios, tailgate meetings or any loud noise that would affect residents in the project area. These practices would not only contribute to noise control in the parking lot adjacent to the mobile home park, but would contribute to controlling noise at the confluence of traffic at the Newland and Hamilton intersection and serve as a behavioral guideline for the entire project.

In addition to the “practice in care” policy, a sound wall extending from the southern edge of the parking lot to the canal overpass, as shown on **Noise Figure 1** would further mitigate the noise generated by workers activities in this lot. This lot is privately-owned. Because the Energy Commission does not have an enforcement authority over privately-owned lands that are outside of its permitting jurisdiction, the installation of this wall would have to be contingent upon a mutual agreement between the parking lot property owner and the project owner. Staff, therefore, requests that the applicant evaluate the feasibility of this mitigation measure and provide input to staff in this regard prior to staff’s preparation of the FSA.

Operation Impacts and Mitigation

The primary noise sources of the HBEP project, when operational, would include engine generators and their exhaust stacks, combustion air inlets, gas compressor, air-cooled condensers (ACCs), electric transformers, and various pumps and fans. Staff compares the projected project noise with applicable LORS, in this case the city of Huntington Beach LORS. In addition, staff evaluates any increase in noise levels at sensitive receptors due to the project in order to identify any significant adverse impacts.

Applicant-proposed noise mitigation measures include the following (HBEP 2012a, AFC § 5.7.4.3.3; HBEP 2012u, Data Response 2):

- heat recovery steam generator (HRSG) stack silencing;
- inlet air silencing;
- gas compressor enclosure;
- acoustical shrouding of HRSG transition duct;
- combustion turbine generator auxiliary enclosure; and
- localized sound walls.

In addition, the project would avoid the creation of annoying tonal (pure-tone) noises by balancing the noise emissions of various power plant features during plant design (HBEP 2012a, AFC § 5.7.4.3.3).

Compliance with LORS

The applicant performed noise modeling to determine the project's noise impacts on sensitive receptors (HBEP 2012u, Figure DR PYLE 6-1). The summary of this modeling is in **Noise Table 6** below. The LORS maximum exterior level that is considered acceptable for single family and mobile residential use, similar to those in the project area, is 55 dBA for daytime (7 a.m. – 10 p.m.) and 50 dBA for nighttime (10 p.m. – 7 a.m.).

Noise Table 6
Predicted Operational Noise Levels at Sensitive Residential Receptors and LORS Limits

Receptor	Operational Noise Level (dBA)[10]	LORS Limit (dBA), Daytime	LORS Limit (dBA), Nighttime	In excess of Daytime LORS (dBA)	In excess of Nighttime LORS (dBA)	In Compliance with LORS?	Distance Power Block 1 (PB-1) (feet)	Distance Power Block 2 (PB-2) (feet)
M2	61	57[11]	55[11]	+4	+6	No	1,800	1,000
M3	45	55	50	-10	-5	Yes	1,850	2,500
M4	49	55	50	-6	-1	Yes	2,350	1,100

As shown in **Noise Table 6**, the cumulative effect of operational noise from PB-1 and PB-2 yield a cumulative noise level at M2 of 61 dBA, 45 dBA at M3 and 49 dBA at M4. Because the cumulative noise levels for M3 and M4 fall below the most stringent limit, the nighttime limit of 50 dBA in the local noise ordinance (see **Noise Table 6**), and comply with the noise element's maximum exterior noise level of 65 dBA L_{DN} (equivalent to 58 dBA for a constant L_{eq} level) allowed for new industrial and commercial uses, the LORS limits are met at these locations.

At first glance, one might conclude that similar to M3 and M4 the operational noise level of 61 dBA at M2 must drop also to 55 dBA between 7 a.m. and 10 p.m. and to 50 dBA between 10 p.m. and 7 a.m. in order to comply with the LORS. But, the existing ambient levels at M2, or 57 dBA L_{eq} for daytime and 55 dBA L_{eq} for nighttime (see **Noise Table 3**), already exceed these prescribed limits. These existing levels, then, become the standards at the M2 location. Thus, project operation at M2 must not create a noise level above 57 dBA L_{eq} between 7 a.m. and 10 p.m. and above 55 dBA L_{eq} between 10 p.m. and 7 a.m. (see **Noise Table 6**).

As explained above, the current project design allows operational noise to be 61 dBA at M2; this must be reduced to 57 dBA (day) and 55 dBA (night) to comply with the LORS. Thus, additional mitigation measures need to be incorporated by the project owner to accomplish this.

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[10] Table DR PYLE 6-1, Additional Responses to Jason Pyle's Data Requests, Set 1 (#1-16)

[11] From **Noise Table 3**

The City of Huntington Beach Noise Element includes proscriptive measures to control noise at sensitive receptors. A selection of those elements is summarized in **Noise Table 2** and may be applied to conditions created by this project's operational activities. The prescriptive approaches that are presented in the City of Huntington Beach Noise Element necessitate the review and compliance with vehicle movement, parking lot design, and mitigation for sensitive receptors where noise sources cannot comply with the conditions in the ordinance. These measures can include sound walls/barriers in various locations, silencers and sound absorptive materials on various types of equipment, and changing the orientation and/or location of noisy equipment, among other industry-accepted mitigation measures. One example of an effective mitigation measure for power plants using dry cooling, such as HBEP, is the employment of super low-noise ACC fans which have a blade shape similar to the screws on a modern submarine. This measure among others would be effective in reducing overall plant noise at sufficient distances from residential communities west, north, and east of the HBEP site, those represented by M2-M4.

Thus, staff believes there are feasible, commercially available mitigation measures to incorporate into the current design of HBEP in order for the project to comply with the above LORS requirements. The final determination of the appropriate acoustical treatment of the project features, however, should be left to the final project design, which would likely happen after the project has been licensed by the Energy Commission.

To ensure that the project would comply with the above noise level limits, staff proposes Condition of Certification **NOISE-4**. This condition of certification requires an operational noise survey to ensure project compliance. This survey would be conducted in two parts. Part 1 would measure project noise when PB-1 becomes operational and Part 2 would measure the combined noise levels from PB-1 and PB-2 when PB-2 becomes operational, almost three years later. The reason for this two-part survey is the long timeframe between the expected online dates for PB-1 and PB-2. It would ensure that PB-1 remains in compliance within that timeframe instead of waiting until the entire project becomes fully operational.

Similar to construction compliance and in addition to **NOISE-4**, staff proposes Conditions of Certification **NOISE-1** and **NOISE-2**, which would establish a public notification and noise complaint process requiring the applicant to resolve any problems that may be caused by operational noise.

With implementation of these conditions of certification, noise due to project operation would comply with the applicable LORS.

CEQA Impacts

Power plant noise is unique. A power plant under base load may operate as essentially, a steady, continuous, broadband noise source. Under load following duty, the power plant noise may be intermittent and start-up at random times. This would be more noticeable at nighttime when background noises are particularly low. Where power plant noise is audible, it tends to define the background noise level. For this reason, staff typically compares projected power plant noise to existing ambient background (L_{90}) noise levels at affected sensitive receptors. If this comparison identifies a significant adverse impact, then feasible mitigation must be applied to the project to either reduce or remove that impact.

In many cases, a power plant operates around the clock for much of the year. HBEP is expected to operate as an intermediate load and peaking facility, and thus, it could likely operate at night, which could affect nearby residences if the noise impacts are left unmitigated. For residential receptors, staff evaluates project noise emissions by comparing them with nighttime ambient background levels; this evaluation assumes that the potential for public annoyance from power plant noise is greatest at night when residents are trying to sleep. Nighttime ambient noise levels are typically lower than daytime levels; differences in background noise levels of 5 to 10 dBA are common. Staff believes it is prudent to average the lowest nighttime hourly background noise levels in terms of the L_{90} metric (the noise level that's exceeded 90 percent of the time) to arrive at a reasonable baseline for comparison with the project's predicted noise level.

Adverse impacts on residential receptors can be identified by comparing predicted power plant noise levels with the nighttime ambient background noise levels at the nearest sensitive residential receptors.

The applicant has predicted operational noise levels, which are summarized in **Noise Table 7**.

Noise Table 7
Predicted Operational Noise Levels at Sensitive Residential Receptors and CEQA Limits

Receptor	Measured Ambient, Four Quietest Consecutive Nighttime Hours, L_{90} (dBA)[12]	Operational Noise Level (dBA)[13]	Cumulative (dBA)	Change (dBA)	Distance Power Block 1 (PB-1) (feet)	Distance Power Block 2 (PB-2) (feet)
M2	55	61 –Projected by Applicant 55 – Nighttime Limit Allowed by LORS	62 58	+7 +3	1800	1000
M3	40	45 –Projected by Applicant	46	+6	1850	2500
M4	41	49 –Projected by Applicant	50	+9	2350	1100

[12] Average of the 4-quiettest nighttime-hour measurements conducted in September 2012 summarized in Table DR PYLE 7-1 (Detailed on Figure DR PYLE 7-1) and the average of the 4-quiettest nighttime-hour measurements conducted in August 2011 included in the AFC Appendix 5.7-A (for example, the average of 65 dBA and 49 dBA at M2=57)

[13] Table DR PYLE 6-1, Additional Responses to Jason Pyle's Data Requests, Set 1 (#1-16)

Staff regards an increase of up to 5 dBA as a less-than-significant impact. A permanent/long-term increase of above 5 dBA at night, when people are trying to sleep, is significant at residential receptors (see **Method and Threshold for Determining Significance** above). In the M2 row of **Noise Table 7**, combining the ambient noise level of 55 dBA L_{90} with the project noise level of 55 dBA (as required by LORS, see above under **Compliance with LORS**) would yield a cumulative value of 58 dBA, 3 dBA above the ambient at M2; this results in a less-than-significant impact.

For M3, the 40 dBA L_{90} and 45 dBA plant level accumulates to 46 dBA L_{90} for a 6 dBA increase above ambient. M4 background measured at 41 dBA L_{90} at 49 dBA plant level yields 50 dBA at M4 for a 9 dBA increase above the ambient. The noise levels at the residential communities near these monitoring locations exceed the 5 dBA incremental nighttime allowance for insignificance. Project noise at M3 must be reduced to 44 dBA L_{90} (also below the LORS limit) to cause an increase of no more than 5 dBA at the residential receptors represented by M3. Also, project noise at M4 must be reduced to 45 dBA L_{90} (also below the LORS limit) to cause an increase of no more than 5 dBA at the residential receptors represented by M4.

Staff proposes Condition of Certification **NOISE-4** to ensure that the changes in noise levels due to project operation would neither cause the cumulative effect of operational noise to exceed the LORS limits nor increase noise above the 5 dBA differential at the nearest sensitive receptors.

Tonal Noises

One possible source of annoyance could be strong tonal noises. Tonal noises are individual sounds (such as pure tones) which, while not louder than permissible levels, stand out in sound quality. The applicant plans to address overall noise in project design, and to take appropriate measures, as needed, to eliminate tonal noises as possible sources of annoyance (HBEP 2012a, AFC § 5.7.4.3.3). To ensure that tonal noises do not cause public annoyance, staff proposes Condition of Certification **NOISE-4**, which would require mitigation measures, if necessary, to ensure the project would not create tonal noises.

Linear Facilities

All water pipes and gas pipes would be underground and therefore silent during plant operation. Noise effects from electrical interconnection lines typically do not extend beyond the lines' right-of-way easements and would be inaudible to receptors.

Vibration

Vibration from an operating power plant could be transmitted through two primary means: ground (ground-borne vibration), and air (airborne vibration).

The operating components of a three-on-one combined cycle power plant consist of high-speed gas turbines, heat recovery steam generator, compressors, and various pumps. All of these pieces of equipment must be carefully balanced in order to operate; permanent vibration sensors are attached to the turbines and generators. Gas turbine generator facilities using the Mitsubishi MHI 501 system have not resulted in ground-borne or airborne vibration impacts. Energy Commission staff agrees with the applicant that ground-borne vibration from the HBEP project would be undetectable by any likely receptor.

Airborne vibration (low frequency noise) can rattle windows and objects on shelves, and can rattle the walls of lightweight structures. The HBEP's chief source of airborne vibration would be the gas turbines' exhaust. In a power plant such as the HBEP, however, the exhaust must pass through the selective catalytic reduction (SCR) modules and the stack silencers before it reaches the atmosphere. The SCRs act as efficient mufflers. The combination of SCR units and stack silencers makes it highly unlikely that the HBEP would cause perceptible airborne vibration effects.

Worker Effects

The applicant acknowledges the need to protect plant operating and maintenance workers from noise hazards and commits to compliance with all applicable LORS (HBEP 2012a, AFC § 5.7.7). Signs would be posted in areas of the plant with noise levels exceeding 85 dBA (the level that OSHA recognizes as a threat to workers' hearing), and hearing protection would be required and provided. To ensure that plant operation and maintenance workers are adequately protected, Energy Commission staff has proposed Condition of Certification **NOISE-5**. For further discussion of proposed worker safety conditions of certification, please see **Worker Safety and Fire Protection** section of this document.

CUMULATIVE IMPACTS AND MITIGATION

Section 15130 of the CEQA guidelines (California Code of Regulations, Title 14) requires a discussion of cumulative environmental impacts. Cumulative impacts are two or more individual impacts (from existing and/or reasonably foreseeable projects) that, when considered together, compound or increase other environmental impacts. CEQA guidelines require that this discussion reflect the severity of the impacts and the likelihood of their occurrence, but do not need to provide as much detail as the discussion of impacts solely attributable to the project.

There is one major planned project in the area that when combined with HBEP could create a significant adverse noise impact at M2-M4; the Poseidon Seawater Desalination Project (Poseidon) planned to be located immediately northeast of HBEP. Poseidon is designed to provide 50 million gallons per day (mgd) of potable water to the city of Huntington Beach and adjacent municipalities. As currently proposed, Poseidon would utilize the existing HBGP seawater cooling system by circulating sea water from the existing intake and sending it through water treatment for potable use. Excess concentrated seawater solution from the treatment process would combine with bypassed seawater, diluting the seawater concentrate before the combined flow discharges back to sea from the existing ocean outfall.

Construction

As a means of enforcement of construction-related mitigation measures, the Poseidon draft environment impact report incorporates condition **CON-15**, which includes the requirement for adequate mufflers on vehicles, compliance with the city's noise ordinance, the use of temporary barriers, and routing control of construction vehicles.

At the same time HBEP would require a number of conditions of certification, which would assure the effective control of construction noise:

- **NOISE-2**: Noise complaint, documentation and resolution.
- **NOISE-6**: Noise control of construction activities.
- **NOISE-7**: Steam blow control.
- **NOISE-8**: Control of traffic noise during construction.
- **NOISE-9**: Noise control during pile driving activities.

Staff recognizes that various construction activities of the two projects might be concomitant, terminating in the coincident operation of HBEP and Poseidon. Nevertheless, staff concludes that both projects would incorporate adequate restrictions and controls to handle any combination of construction activities which would generate noise.

Operation

Condition of Certification **NOISE-4** limits nighttime operational noise levels resulting from HBEP alone to 55 dBA at M2, 44 dBA at M3, and 45 dBA at M4. The Final Subsequent Environmental Impact Report for Poseidon (City of Huntington Beach 2010, Table N-13) predicts the noise levels from the Poseidon's operational activities to be 49 dBA near M2, 41 dBA near M3, and 43 near M4 (see **Noise Table 8** below).

Combining 55 dBA and 49 dBA at M2 results in 56, which is only 1 dBA above the existing ambient level (See **Noise Table 8** below). Combining 44 dBA and 41 dBA at M3 results in 46, which is 6 dBA above the existing ambient level (See **Noise Table 8**). Combining 45 dBA and 43 dBA at M4 results in 47, which is also 6 dBA above the existing ambient level (See **Noise Table 8**).

Noise Table 8
Cumulative Noise Levels at Sensitive Residential Receptors

Receptor	Measured Ambient, Four Quietest Consecutive Nighttime Hours, L_{90} (dBA)[14]	Operational Noise Level (dBA) from HBEP	Operational Noise Level (dBA) from Poseidon	Cumulative from Both Projects (dBA)	Change (dBA)
M2	55	55	49	56	+1
M3	40	44	41	46	+6
M4	41	45	43	47	+6

[14] Average of the 4-quiettest nighttime-hour measurements conducted in September 2012 summarized in Table DR PYLE 7-1 (Detailed on Figure DR PYLE 7-1) and the average of the 4-quiettest nighttime-hour measurements conducted in August 2011 included in the AFC Appendix 5.7-A (for example, the average of 65 dBA and 49 dBA at M2=57)

Staff considers a 6 dBA increase to be less-than-significant since both projects would incorporate adequate mitigation measures to handle any combination of operational activities which would generate noise. Poseidon would utilize up to 25 pumps at a time, locating the largest of these pumps within the reverse osmosis (RO) building. The RO building would incorporate an effective combination of sound attenuation materials and methods: “Noise levels from reverse-osmosis building would be reduced by the inclusion of double walls, sound absorbing materials, acoustic barriers, sound-control curtains, and sound baffles.”[15] Poseidon would have to mitigate its noise impacts by approximately 15-20 dBA (City of Huntington Beach 2010, Table N-13). HBEP would have to implement additional mitigation measures to reduce its operational noise levels by up to 6 dBA (see **Noise Table 7**, the M2 row of the third column). The combination of these noise reductions is adequate to address the cumulative impact of the two projects.

Therefore, HBEP would create a less-than-significant cumulative impact.

FACILITY CLOSURE

All operational noise from the project would cease when the HBEP project closes, and no further adverse noise impact from its operation would be possible. The remaining potential temporary noise source would be the dismantling of the project structures and equipment, as well as any site restoration work that may be performed. Since this noise would be similar to that caused by the original construction, it could be similarly treated -- that is, noisy work could be performed during daytime hours with machinery and equipment that are properly insulated and/or equipped with mufflers. Any noise LORS in existence at that time would apply. Unless modified, applicable conditions of certification included in the Energy Commission decision would also apply.

CONCLUSIONS

Staff has analyzed the proposed project and modeled data furnished by the applicant and concludes that the selected operational conditions proposed for the HBEP do not fully comply with the LORS requirements and CEQA guidelines. Staff recommends that additional conditions be implemented to ameliorate special conditions due to the extended eight-year construction schedule (**NOISE-6**), and the additional traffic loading on adjacent residential neighborhoods (**NOISE-8**) during this period as means to bringing noise levels into compliance. In addition, staff recommends conditions covering complaint resolution (**NOISE-1** and **NOISE-2**), worker and employee protection (**NOISE-3, NOISE-5**), and on-site construction activities (**NOISE- 6, NOISE-7 and NOISE-9**).

In addition to the “practice in care” policy outlined in **NOISE-8**, a sound wall along the western edge of the parking lot immediately east of the Mobile Home Park as shown on **Noise Figure 1** would further mitigate the noise generated by workers activities in this lot. This lot is privately-owned. Because the Energy Commission does not have an

[15] City of Huntington Beach 2010, pp. 4.9-55 – 4-9-56

enforcement authority over privately-owned lands that are outside of its permitting jurisdiction, the installation of this wall would have to be contingent upon a mutual agreement between the parking lot property owner and the project owner. Staff, therefore, requests that the applicant evaluate the feasibility of this mitigation measure and provide input to staff in this regard prior to staff's preparation of the FSA.

If built and operated in conformance with the proposed conditions of certification, staff believes that HBEP would comply with all applicable noise and vibration LORS. Staff concludes that the project would produce no significant direct or cumulative adverse noise impacts under CEQA guidelines on people within the project area, including minority populations, directly, indirectly, or cumulatively. Staff concludes that conditions requiring ongoing measurement, feedback and resolution, particularly those under **NOISE-4,** would serve to meld the newly configured power facility with nearby residential neighborhoods and public access areas.

PROPOSED CONDITIONS OF CERTIFICATION

PUBLIC NOTIFICATION PROCESS

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

Verification: Prior to ground disturbance, the project owner shall transmit to the compliance project manager (CPM) a statement, signed by the project owner's project manager, stating that the above notification has been performed, and describing the method of that notification. This communication shall also verify that the telephone number has been established and posted at the site, and shall provide that telephone number.

NOISE COMPLAINT PROCESS

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

- use the Noise Complaint Resolution Form (below), or a functionally equivalent procedure acceptable to the CPM, to document and respond to each noise complaint;

- attempt to contact the person(s) making the noise complaint within 24 hours;
- conduct an investigation to determine the source of noise in the complaint;
- if the noise is project related, take all feasible measures to reduce the source of the noise; and
- submit a report documenting the complaint and actions taken. The report shall include: a complaint summary, including the final results of noise reduction efforts and, if obtainable, a signed statement by the complainant that states that the noise problem has been resolved to the complainant's satisfaction.

Verification: Within five days of receiving a noise complaint, the project owner shall file a Noise Complaint Resolution Form, shown below, with both the local jurisdiction and the CPM, that documents the resolution of the complaint. If mitigation is required to resolve the complaint, and the complaint is not resolved within a three-day period, the project owner shall submit an updated Noise Complaint Resolution Form when the mitigation is performed and complete.

EMPLOYEE NOISE CONTROL PROGRAM

NOISE-3 The project owner shall submit to the CPM for review and approval a noise control program. The noise control program shall be used to reduce employee exposure to high (above permissible) noise levels during construction in accordance to the applicable OSHA and Cal-OSHA standards.

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

NOISE RESTRICTIONS

NOISE-4 The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that the operation of the project will not cause the noise levels due to plant operation alone, during the hours of 10:00 p.m. to 7 a.m., to exceed an average of 55 dBA L_{eq}, and during the hours of 7:00 a.m. and 10:00 p.m., to exceed an average of 57 dBA L_{eq}, measured at or near monitoring location M2.

Also, the project design and implementation shall include appropriate noise mitigation measures adequate to ensure that the operation of the project will not cause the noise levels due to plant operation alone, during the four quietest consecutive hours of the nighttime, to exceed an average of 44 dBA L_{90} measured at or near monitoring location M3 and an average of 45 dBA L_{90} measured at or near monitoring location M4.

No new pure-tone components shall be caused by the project. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints[16].

When the project first achieves a sustained output of 90 percent or greater of its rated capacity, the project owner shall conduct a 25-hour community noise survey at monitoring locations M2, M3 and M4, or at a closer location acceptable to the CPM and include L_{eq} and L_{90} readings. This survey shall also include measurement of one-third octave band sound pressure levels to ensure that no new pure-tone noise components have been caused by the project.

The measurement of power plant noise for the purposes of demonstrating compliance with this condition of certification may alternatively be made at a location, acceptable to the CPM, closer to the plant (e.g., 400 feet from the plant boundary) and this measured level then mathematically extrapolated to determine the plant noise contribution at the affected residence. The character of the plant noise shall be evaluated at the affected receptor locations to determine the presence of pure tones or other dominant sources of plant noise.

If the results from the noise survey indicate that the power plant noise at the affected receptor sites exceed the above values, mitigation measures shall be implemented to reduce noise to a level of compliance with these limits. If the results from the noise survey indicate that pure tones are present, mitigation measures shall be implemented to eliminate the pure tones.

Verification: The above noise survey shall be conducted in two parts. Part one shall take place within 90 days of Power Block 1 (PB-1) first achieving a sustained output of 90 percent or greater of its rated capacity. Part 2 of this survey shall be performed within 90 days of Power Block 2 (PB-2) first achieving 90 percent or greater of its rated capacity and shall include the combined operation of PB-1 and PB-2 at 90 percent or greater of the overall plant rated capacity.

Within 15 days after completing each part, the project owner shall submit a summary report to the CPM. Included in the survey report shall be a description of any additional mitigation measures necessary to achieve compliance with the above listed noise limits, and a schedule, subject to CPM approval, for implementing these measures. When these measures are implemented and in place, the project owner shall repeat the noise survey.

Within 15 days of completion of the new survey, the project owner shall submit to the CPM a summary report of the new noise survey, performed as described above and showing compliance with this condition.

[16] A legitimate complaint refers to a complaint about noise that is caused by the HBEP project as opposed to another source (as verified by the CPM). A legitimate complaint constitutes a violation by the project of any noise condition of certification (as confirmed by the CPM), which is documented by an individual or entity affected by such noise.

OCCUPATIONAL NOISE SURVEY

NOISE-5 Following PB-1's attainment of a sustained output of 90 percent or greater of its rated capacity, the project owner shall conduct an occupational noise survey to identify any noise hazardous areas in the facility. Following PB-2's attainment of a sustained output of 90 percent or greater of its rated capacity, the project owner shall repeat this survey.

The survey shall be conducted by a qualified person in accordance with the provisions of Title 8, California Code of Regulations, sections 5095-5099 (Article 105) and Title 29, Code of Federal Regulations, section 1910.95. The survey results shall be used to determine the magnitude of employee noise exposure.

The project owner shall prepare a report of the survey results and, if necessary, identify proposed mitigation measures to be employed in order to comply with the applicable California and federal regulations.

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

CONSTRUCTION RESTRICTIONS

NOISE-6 Heavy equipment operation and noisy[17] construction work relating to any project features, including pile driving, shall be restricted to the times delineated below:

Mondays through Saturdays:	7:00 a.m. to 8:00 p.m.
Sundays and Federal Holidays:	Construction not allowed

Haul trucks and other engine-powered equipment shall be equipped with adequate mufflers and other state-required noise attenuation devices. Haul trucks shall be operated in accordance with posted speed limits. Truck engine exhaust brake use (jake braking) shall be limited to emergencies. Construction equipment generating excessive noise[18] shall be updated or replaced. Temporary acoustic barriers shall be installed around stationary construction noise sources, if required to minimize construction noise. Reorient construction equipment, and relocate construction staging areas, when possible, to minimize the noise impact at nearest noise-sensitive receptors.

Verification: Prior to ground disturbance, the project owner shall transmit to the CPM a statement acknowledging that the above restrictions will be observed throughout the construction of the project.

[17] Noise that draws legitimate complaint (for the definition of "legitimate complaint", see the footnote in Condition of Certification **NOISE-4**)

[18] Noise that draws legitimate complaint (for the definition of "legitimate complaint", see the footnote in Condition of Certification **NOISE-4**)

STEAM BLOW RESTRICTIONS

NOISE-7 If a traditional, high-pressure steam blow process is used the project owner shall equip steam blow piping with a temporary silencer that quiets the noise of steam blows to no greater than 89 dBA measured at a distance of 50 feet. The steam blows shall be conducted between 8:00 a.m. and 5:00 p.m. If a low-pressure, continuous steam blow process is used, the project owner shall submit to the CPM a description of the process, with expected noise levels and planned hours of steam blow operation.

Verification: At least 15 days prior to the first steam blow, the project owner shall notify all residents or business owners within one mile of the project site boundary. The notification may be in the form of letters, phone calls, fliers, or other effective means as approved by the CPM. The notification shall include a description of the purpose and nature of the steam blow(s), the planned schedule, expected sound levels, and explanation that it is a one-time activity and not part of normal plant operation.

VEHICULAR NOISE DURING CONSTRUCTION

NOISE-8 The project owner shall reduce the noise impacts created by vehicular noise during the construction of HBEP by implementation of a “practice in care” policy as a part of the HBEP employee safety training program. This “practice in care” policy shall require avoiding unnecessary blowing of car horns, revving engines, loud radios, tailgate meetings or any loud noise caused by project workers that would affect residents in the adjacent mobile home park and the residential communities near the intersection of Newland and Hamilton north of the project site.

Verification: Prior to ground disturbance at the project site, the project owner shall transmit to the CPM a statement acknowledging that the above “practice in care” policy will be followed throughout the construction of the project.

PILE DRIVING MANAGEMENT

NOISE-9 The project owner shall perform pile driving using a quieter process than the traditional pile driving techniques to ensure that noise from this operation does not cause annoyance at monitoring locations M2, M3, and M4.

Verification: At least 15 days prior to first pile driving, the project owner shall submit to the CPM a description of the pile driving technique to be employed, including calculations showing its projected noise impacts at monitoring locations M2-M4.

EXHIBIT 1 - NOISE COMPLAINT RESOLUTION FORM

Huntington Beach Energy Project
(12-AFC-2)

NOISE COMPLAINT LOG NUMBER ________________________

Complainant's name and address:

Phone number: ________________________

Date complaint received: ________________________
Time complaint received: ________________________

Nature of noise complaint:

Definition of problem after investigation by plant personnel:

Date complainant first contacted: ________________________

Initial noise levels at 3 feet from noise source _________ dBA Date: _____________

Initial noise levels at complainant's property: __________ dBA Date: ____________

Final noise levels at 3 feet from noise source: ________ dBA Date: _____________

Final noise levels at complainant's property: __________ dBA Date: ____________

Description of corrective measures taken:

Complainant's signature: ________________________ Date: ____________

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

This information is certified to be correct:

Plant Manager's Signature: ________________________

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

REFERENCES

City of Huntington Beach 1996 – City of Huntington Beach General Plan, Noise Element

City of Huntington Beach 2012 – City of Huntington Beach Municipal Code, Noise Ordinance, Chapter 8.40, Noise Control

City of Huntington Beach 2010 – Final Subsequent Environmental Impact Report for Poseidon Seawater Desalination Project, August 23, 2010

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NOISE APPENDIX A
FUNDAMENTAL CONCEPTS OF COMMUNITY NOISE

To describe noise environments and to assess impacts on noise sensitive areas, a frequency weighting measure, which simulates human perception, is customarily used. It has been found that A-weighting of sound intensities best reflects the human ear's reduced sensitivity to low frequencies and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. Decibels are logarithmic units that conveniently compare the wide range of sound intensities to which the human ear is sensitive. **Noise Table A1** provides a description of technical terms related to noise.

Noise environments and consequences of human activities are usually well represented by an equivalent A-weighted sound level over a given time period (L_{eq}), or by average day and night A-weighted sound levels with a nighttime weighting of 10 dBA (L_{dn}). Noise levels are generally considered low when ambient levels are below 45 dBA, moderate in the 45 to 60 dBA range, and high above 60 dBA. Outdoor day-night sound levels vary over 50 dBA depending on the specific type of land use. Typical L_{dn} values might be 35 dBA for a wilderness area, 50 dBA for a small town or wooded residential area, 65 to 75 dBA for a major metropolis downtown (e.g., San Francisco), and 80 to 85 dBA near a freeway or airport. Although people often accept the higher levels associated with very noisy urban residential and residential-commercial zones, they nevertheless are considered to be levels of noise adverse to public health.

Various environments can be characterized by noise levels that are generally considered acceptable or unacceptable. Lower levels are expected in rural or suburban areas than what would be expected for commercial or industrial zones. Nighttime ambient levels in urban environments are about seven decibels lower than the corresponding average daytime levels. The day-to-night difference in rural areas away from roads and other human activity can be considerably less. Areas with full-time human occupation that are subject to nighttime noise, which does not decrease relative to daytime levels, are often considered objectionable. Noise levels above 45 dBA at night can result in the onset of sleep interference effects. At 70 dBA, sleep interference effects become considerable (Effects of Noise on People, U.S. Environmental Protection Agency, December 31, 1971).

In order to help the reader understand the concept of noise in decibels (dBA), **Noise Table A2** has been provided to illustrate common noises and their associated sound levels, in dBA.

NOISE Table A1
Definition of Some Technical Terms Related to Noise

Terms	Definitions
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a Sound Level Meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this testimony are A-weighted.
L_{10}, L_{50}, & L_{90}	The A-weighted noise levels that are exceeded 10 percent, 50 percent, and 90 percent of the time, respectively, during the measurement period. L_{90} is generally taken as the background noise level.
Equivalent Noise Level, L_{eq}	The energy average A-weighted noise level during the Noise Level measurement period.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 4.8 decibels to levels in the evening from 7 p.m. to 10 p.m., and after addition of 10 decibels to sound levels in the night between 10 p.m. and 7 a.m.
Day-Night Level, L_{dn} or DNL	The Average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10 p.m. and 7 a.m.
Ambient Noise Level	The composite of noise from all sources, near and far. The normal or existing level of environmental noise at a given location (often used for an existing or pre-project noise condition for comparison study).
Intrusive Noise	That noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.
Pure Tone	A pure tone is defined by the Model Community Noise Control Ordinance as existing if the one-third octave band sound pressure level in the band with the tone exceeds the arithmetic average of the two contiguous bands by 5 decibels (dB) for center frequencies of 500 Hz and above, or by 8 dB for center frequencies between 160 Hz and 400 Hz, or by 15 dB for center frequencies less than or equal to 125 Hz.
Source: Guidelines for the Preparation and Content of Noise Elements of the General Plan, Model Community Noise Control Ordinance, California Department of Health Services 1976, 1977.	

Noise Table A2
Typical Environmental and Industry Sound Levels

Noise Source (at distance)	A-Weighted Sound Level in Decibels (dBA)	Noise Environment	Subjective Impression
Civil Defense Siren (100')	140-130		Pain Threshold
Jet Takeoff (200')	120		Very Loud
Very Loud Music	110	Rock Music Concert	
Pile Driver (50')	100		
Ambulance Siren (100')	90	Boiler Room	
Freight Cars (50')	85		
Pneumatic Drill (50')	80	Printing Press Kitchen with Garbage Disposal Running	Loud
Freeway (100')	70		Moderately Loud
Vacuum Cleaner (100')	60	Data Processing Center Department Store/Office	
Light Traffic (100')	50	Private Business Office	
Large Transformer (200')	40		Quiet
Soft Whisper (5')	30	Quiet Bedroom	
	20	Recording Studio	
	10		Threshold of Hearing
Source: Handbook of Noise Measurement, Arnold P.G. Peterson, 1980			

Subjective Response to Noise

The adverse effects of noise on people can be classified into three general categories:

- Subjective effects of annoyance, nuisance, dissatisfaction.
- Interference with activities such as speech, sleep, and learning.
- Physiological effects such as anxiety or hearing loss.

The sound levels associated with environmental noise, in almost every case, produce effects only in the first two categories. Workers in industrial plants can experience noise effects in the last category. There is no completely satisfactory way to measure the subjective effects of noise, or of the corresponding reactions of annoyance and dissatisfaction, primarily because of the wide variation in individual tolerance of noise.

One way to determine a person's subjective reaction to a new noise is to compare the level of the existing (background) noise, to which one has become accustomed, with the level of the new noise. In general, the more the level or the tonal variations of a new noise exceed the previously existing ambient noise level or tonal quality, the less acceptable the new noise will be, as judged by the exposed individual.

With regard to increases in A-weighted noise levels, knowledge of the following relationships can be helpful in understanding the significance of human exposure to noise.

1. Except under special conditions, a change in sound level of one dB cannot be perceived.

2. Outside of the laboratory, a three dB change is considered a barely noticeable difference.

3. A change in level of at least five dB is required before any noticeable change in community response would be expected.

4. A ten dB change is subjectively heard as an approximate doubling in loudness and almost always causes an adverse community response. (Kryter, Karl D., The Effects of Noise on Man, 1970).

Combination of Sound Levels

People perceive both the level and frequency of sound in a non-linear way. A doubling of sound energy (for instance, from two identical automobiles passing simultaneously) creates a three dB increase (i.e., the resultant sound level is the sound level from a single passing automobile plus three dB). The rules for decibel addition used in community noise prediction are:

Noise Table A3
Addition of Decibel Values

When two decibel values differ by:	Add the following amount to the larger value
0 to 1 dB	3 dB
2 to 3 dB	2 dB
4 to 9 dB	1 dB
10 dB or more	0
Figures in this table are accurate to ± 1 dB.	

Source: Architectural Acoustics, M. David Egan, 1988

Sound and Distance

Doubling the distance from a noise source reduces the sound pressure level by six dB.

Increasing the distance from a noise source 10 times reduces the sound pressure level by 20 dB.

Worker Protection

OSHA noise regulations are designed to protect workers against the effects of noise exposure, and list permissible noise level exposure as a function of the amount of time to which the worker is exposed:

Noise Table A4
OSHA Worker Noise Exposure Standards

Duration of Noise (Hrs/day)	A-Weighted Noise Level (dBA)
8.0	90
6.0	92
4.0	95
3.0	97
2.0	100
1.5	102
1.0	105
0.5	110
0.25	115

Source: 29 C.F.R. § 1910.

NOISE AND VIBRATION - FIGURE 1
Huntington Beach Energy Project - Sound Monitoring Locations

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: Additional Responses, Figure 5-7.1R, 1/17/2013, CH2MHILL

SOCIOECONOMICS

Lisa Worrall

SUMMARY OF CONCLUSIONS

Energy Commission staff concludes that construction and operation of the Huntington Beach Energy Project (HBEP) would not cause significant direct, indirect, or cumulative adverse socioeconomic impacts on the project area's housing, schools, law enforcement services, and parks. Staff also concludes that the project would not induce a substantial population growth or displacement of population, or induce substantial increases in demand for housing, parks, or law enforcement services. Staff-proposed Conditions of Certification **SOCIO-1** and **SOCIO-2** would ensure project compliance with state and local laws, ordinances, regulations, and standards (LORS).

Staff concludes the population in the six-mile project buffer does not constitute an environmental justice population as defined by *Environmental Justice: Guidance Under the National Environmental Policy Act*, and would not trigger further scrutiny for purposes of an environmental justice analysis.

Staff requests the applicant and City of Huntington Beach staff submit estimated calculations of development impact fees for the HBEP according to the city's determination that the footprint of the power blocks, HRSGs, cooling towers, and administration buildings. The applicant and city's response to staff's request would be included in the Final Staff Assessment (FSA).

INTRODUCTION

Staff's socioeconomics impact analysis evaluates the project's induced changes on existing population, employment patterns, and community services. Staff discusses the estimated impacts of the construction and operation of the HBEP on local communities, community resources, and law enforcement services, and provides a discussion of the estimated beneficial economic impacts of the construction and operation of the proposed project.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Socioeconomics Table 1 contains socioeconomics laws, ordinances, regulations, and standards (LORS) applicable to the proposed project.

Socioeconomics Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
State	
California Education Code, Section 17620	The governing board of any school district is authorized to levy a fee, charge, dedication, or other requirement for the purpose of funding the construction or reconstruction of school facilities.
California Government Code, Sections 65996-65997	Except for a fee, charge, dedication, or other requirement authorized under Section 17620 of the Education Code, state and local public agencies may not impose fees, charges, or other financial requirements to offset the cost for school facilities.
Local	
Huntington Beach Municipal Code	
Chapter 17.67	Library development impact fees
Chapter 17.75	Police facilities development impact fees
Chapter 17.76	Parkland acquisition and park facilities development impact fees

SETTING

The proposed HBEP is located in the city of Huntington Beach, Orange County, on the existing AES Huntington Generating Station property. The existing power plant is in an industrial area of Huntington Beach on Newland Street, north of the intersection with Pacific Coast Highway. The existing power plant has four operating steam generating units (units 1, 2, 3, and 4) and unit 5, a retired 133-megawatt (MW) peaking unit. A total of 22 acres of construction laydown would be required for the HBEP; 6 acres on the existing AES Huntington Generation Station property for construction staging and parking (approximately 1.5 acres) and 16 acres at the AES Alamitos Generating Station, for construction staging only. Additional demolition and construction worker parking is proposed at four locations: 3 acres of existing paved parking adjacent to HBEP, across Newland Street; 2.5 acres of existing paved parking at the corner of Pacific Coast Highway and Beach Boulevard; 225 stalls at the city of Huntington Beach shore parking west of the HBEP site; and 1.9 acres at the Plains All American Tank Farm on Magnolia Street. Shuttle service would be provided between the parking areas and the HBEP site:

For the purposes of assessing project impacts, staff defines the “local workforce” during project construction as residing within a two-hour commute of the project. This includes Santa Ana-Anaheim-Irvine Metropolitan Statistical Area (MSA) (Orange County), Los Angeles-Long Beach-Glendale Metropolitan Division (Los Angeles County), and Riverside-San Bernardino-Ontario MSA (Riverside and San Bernardino counties).The “local workforce” during project operation is defined as residing within a one-hour commute of the project.

Staff defines the study area related to project impacts on population and housing, as the city of Huntington Beach and nearby cities of Costa Mesa, Fountain Valley, and

Newport Beach. The city of Huntington Beach is the study area for impacts to police services and parks. The Huntington Beach Elementary City School District and Huntington Beach Union High School District are the study areas for impacts to education. The study area for indirect and induced economic impacts is defined as Orange County. The study area for environmental justice impacts is within a six-mile buffer of the project site.

USING THE 2010 US CENSUS AND US CENSUS BUREAU'S AMERICAN COMMUNITY SURVEY IN STAFF ASSESSMENTS

The detailed social, economic, and housing information previously collected only in the decennial census was not collected for the 2010 Census (US Census 2011a). This information is now collected through the U.S. Census Bureau's American Community Survey (ACS). Decennial census data is a 100 percent count collected once every ten years and represents information from a single reference point (April 1st). The main function of the decennial census is to provide *counts* of people for the purpose of congressional apportionment and legislative redistricting. ACS estimates are collected from a sample of the population based on information compiled continually and aggregated into one, three, and five-year estimates ("period estimates") released every year. The primary purpose of the ACS is to measure the changing social and economic characteristics of the U.S. population. As a result, the ACS does not provide official counts of the population in between censuses. Instead, the Census Bureau's Population Estimates Program will continue to be the official source for annual population totals, by age, race, Hispanic origin, and sex.

ACS collects data at every geography level from the largest level (nation) to the smallest level available (block group (BG)).[1] Census Bureau staff recommends the use of data no smaller than the Census tract level.[2,3] Data from the five-year estimates is used for our analysis as it provides the greatest detail at the smallest geographic level. Because ACS estimates come from a sample population, a certain level of variability is associated with these estimates. This variability is expressed as a margin of error (MOE). The MOE is used to calculate the coefficient of variation (CV). CVs are a standardized indicator of the reliability of an estimate. While not a set rule, the US Census Bureau considers the use of estimates with a CV of more than 15 percent a cause for caution when interpreting patterns in the data (US Census 2009). In situations

[1] Census Block Group - A statistical subdivision of a census tract. A BG consists of all tabulation blocks whose numbers begin with the same digit in a census tract; for example, for Census 2000, BG 3 within a census tract includes all blocks numbered between 3000 and 3999. The block group is the lowest-level geographic entity for which the Census Bureau tabulates sample data from the decennial census. http://www.census.gov/dmd/www/glossary.html.

[2] Census Tract - A small, relatively permanent statistical subdivision of a county or statistically equivalent entity, delineated for data presentation purposes by a local group of census data users or the geographic staff of a regional census center in accordance with Census Bureau guidelines. Census tracts are designed to be relatively homogeneous units with respect to population characteristics, economic status, and living conditions at the time they are established. Census tracts generally contain between 1,000 and 8,000 people, with an optimum size of 4,000 people. Census tract boundaries are delineated with the intention of being stable over many decades, so they generally follow relatively permanent visible features. http://www.census.gov/dmd/www/glossary.html.

[3] Census Workshop: Using the American Community Survey (ACS) and The New American Factfinder (AFF) hosted by Sacramento Area Council of Governments on May 11 & 12, 2011. Workshop presented by Barbara Ferry, U.S. Census Partnership Data Services Specialist.

where CVs for estimates are high, the reliability of an estimate improves by using estimates for a larger geographic area (e.g. city or community versus census tract), or by aggregating estimates of adjacent geographic areas, such as cities.

PROJECT-SPECIFIC DEMOGRAPHIC SCREENING

Staff's demographic screening is based on information contained in two documents: *Environmental Justice: Guidance Under the National Environmental Policy* Act (CEQ 1997) and *Final Guidance for Incorporating Environmental Justice Concerns in EPA's Compliance Analyses* (US EPA 1998). The intention is to identify potentially sensitive populations, which could be disproportionately impacted by the proposed action. Due to the changes in the data collection methods used by the U.S. Census Bureau, the screening process relies on 2010 U.S. Census data to determine the number of minority populations and data from the 2007-2011 ACS to evaluate the presence of individuals and households living below the federal poverty level.

Staff's demographic screening is designed to identify the presence of minority and below-poverty-level populations within a six-mile area of the proposed project site. The six-mile buffer is based on air quality modeling, which shows that project-related impacts from pollutants decrease to less than significant within six miles of the emission site. Staff uses the six-mile buffer to determine the area of potential project impacts and to obtain data to gain a better understanding of the demographic makeup of the communities potentially impacted by the project. Once Socioeconomics staff identifies the presence of an environmental justice population, staff from the thirteen affected technical areas evaluates the project for potential disproportionate impacts on the environmental justice population.[4] When staff's screening analysis does not identify the population in the six-mile buffer to be an environmental justice population, as defined by *Environmental Justice: Guidance Under the National Environmental Policy Act*, no further scrutiny of this population is required for purposes of an environmental justice analysis.

Minority Populations

According to *Environmental Justice: Guidance Under the National Environmental Policy Act*, minority individuals are defined as members of the following groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. An environmental justice population is identified when the minority population of the potentially affected area is greater than fifty percent or the minority population percentage is meaningfully greater than the minority population in the general population or other appropriate unit of geographical analysis.

Socioeconomics Figure 1 shows the total population within the six-mile buffer of the project site was 367,721 persons, with a minority population of 141,559 persons, or about 39 percent of the total population (US Census 2010a). The population in the six-mile buffer lives primarily within the cities of Huntington Beach, Costa Mesa, Fountain Valley, and Newport Beach, and to a much lesser extent, in the cities of Westminster

[4] The thirteen technical staff/areas are Air Quality, Hazardous Materials Management, Land Use, Noise and Vibration, Public Health, Socioeconomics, Soils and Surface Water Resources, Water Supply, Traffic and Transportation, Transmission Line Safety and Nuisance, Visual Resources, Cultural Resources, and Waste Management.

and Santa Ana. **Socioeconomics Figure 2** shows the cities in and around the six-mile buffer. When compared with minority populations in the Census County Divisions (CCD) that encompass the project buffer and Orange County, the minority population in the six-mile buffer is less than the minority populations in these comparison geographies (**Socioeconomics Table 2**).

Socioeconomics Table 2
Minority Populations within the Project Area

Area	Total Population	Not Hispanic or Latino: White alone	Minority	Percent Minority
Six-Mile Buffer of Project Site (**Socioeconomics Figure 1**)	367,721	226,162	141,559	38.50
Costa Mesa (city)	109,960	56,993	52,967	48.17
Fountain Valley (city)	55,313	27,234	28,079	**50.76**
Huntington Beach (city)	189,992	127,640	62,352	32.82
Newport Beach (city)	85,186	70,142	15,044	17.66
Santa Ana (city)	324,528	29,950	294,578	**90.77**
Westminster (city)	89,701	22,972	66,729	**74.39**
Project Area CCDs*- Total	612,276	349,324	262,952	42.95
--North Coast CCD	366,151	197,280	168,871	46.12
--Central Coast CCD	246,125	152,044	94,081	38.22
Orange County	3,010,232	1,328,499	1,681,733	**55.87**
California	37,253,956	14,956,253	22,297,703	**59.85**

Notes: Bold text- minority population 50 percent or greater. *CCD - Census County Division.
Source: US Census 2010a.

Staff concludes that the minority population in the six-mile buffer is not meaningfully greater than the minority populations in the comparison geographies and therefore does not constitute an environmental justice population as defined by *Environmental Justice: Guidance Under the National Environmental Policy Act*, and would not trigger further scrutiny for purposes of an environmental justice analysis.

Below-Poverty-Level-Populations

The poverty status of households and individuals is determined based on a set of income thresholds, set by the U.S. Census Bureau, that vary by family size and composition. If the total income of the family is less than the family's threshold, that family and every individual in it is considered in poverty. The official poverty thresholds do not vary by geography (e.g. state, county, etc.), but are updated annually to allow for changes in the cost of living. The population for whom poverty status is determined does not include institutionalized people, people in military quarters, people in college dormitories, and unrelated individuals under 15 years old.

Staff identified the below-poverty-level population in the project area using place level data from the 2007-2011 ACS Five-Year Estimates from the U.S. Census (US Census 2011b).[5] Within six miles of the HBEP, approximately eight percent, or 37,515 people,

[5] Staff determined that the data at the place level is the lowest level available that retains reasonable accuracy. The data represents a period estimate, meaning the numbers represent an area's characteristics for the specified time period.

live below the federal poverty threshold.[6] **Socioeconomics Table 3** presents poverty data for the area in a six-mile buffer of the project site.

The Council on Environmental Quality (CEQ) and US EPA guidance documents identify a fifty percent threshold to determine whether minority populations are considered environmental justice populations, but do not provide a discrete threshold for below poverty level populations. As an initial indicator of whether a low-income population of sufficient size is present and would warrant status as an environmental justice community, staff compares the below-poverty-level populations in the six-mile buffer to other appropriate geographies. As shown in **Socioeconomics Table 3,** staff used data for the cities of Santa Ana and Westminster, Census County Divisions, and Orange County, as geographies to compare levels of poverty in populations near the project.

Socioeconomics Table 3
Poverty Data within the Project Area

Area	Total			Income in the past 12 months below poverty level			Percent below poverty level		
	Estimate*	MOE	CV	Estimate	MOE	CV	Estimate	MOE	CV
Cities Used to Determine Poverty Status- Total	453,761	±509	0.70	37,515	2,362	3.83	8.27	±0.5	3.68
--Costa Mesa	108,016	±318	0.18	14,150	±1,520	6.53	13.10	±1.4	6.50
--Fountain Valley	54,992	±144	0.16	3,365	±606	10.95	6.10	±1.1	10.96
--Huntington Beach	188,794	±337	0.11	13,993	±1,469	6.38	7.40	±0.8	6.57
--Newport Beach	83,959	±154	0.11	6,007	±863	8.73	7.20	±1.0	8.44
Comparison Geographies									
Santa Ana (city)	318,075	928	0.18	62,053	3,525	3.45	19.5	±1.1	3.43
Westminster (city)	88,882	273	0.19	12,176	1,480	7.39	13.7	±1.7	7.54
Project Area CCDs**- Total	598,873	1,767	0.18	62,794	2,912	2.82	10.49	0.5	2.90
--North Coast CCD	364,163	±1,254	0.21	32,716	±2,091	3.89	9.00	±0.6	4.05
--Central Coast CCD	234,710	±1,245	0.32	30,078	±2,026	4.09	12.80	±0.8	3.80
Orange County	2,952,214	±1,664	0.03	320,473	±6,174	1.17	10.90	±0.2	1.16
California	36,211,794	±3,530	0.01	5,211,481	±39,013	0.46	14.4%	±0.1	0.42

Note: * Population for whom poverty status is determined. **CCD – Census County Division.
Source: US Census 2011b.

Roughly eight percent of the population within six miles of the project site lives below the poverty level. Of the cities used to determine the poverty status within the six-mile buffer, the city of Costa Mesa stands out with 13 percent of the population living below the poverty level, compared with the three other cities' (Fountain Valley, Huntington Beach, and Newport Beach) more moderate 6 to 7 percent below-poverty-level population. By contrast, city of Santa Ana had 19.5 percent population below the

[6] ACS estimates for the tracts within a six-mile buffer of the project site were aggregated using the ACS calculator at the Oklahoma Department of Commerce, consistent with instructions received during the May 11 & 12, 2011 Census Workshop.

poverty level. Other comparison geographies had percentages ranging from 10 percent for the project area CCDs to California's 14 percent. Staff concludes that the below-poverty-level population in the six-mile buffer is not meaningfully greater than the below-poverty-level population in the comparison geographies and does not constitute an environmental justice population as defined by *Environmental Justice: Guidance Under the National Environmental Policy Act*.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

The California Environmental Quality Act (CEQA) requires a list of criteria to determine the significance of identified impacts. A significant impact is defined by CEQA as "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project" (State CEQA Guidelines Section 15382).

Thresholds serve as the benchmark for determining if a project will result in a significant adverse impact when evaluated against existing conditions (e.g., "baseline" conditions). State CEQA Guideline Section 15064(e) specifies that: "[e]conomic and social changes resulting from the project shall not be treated as significant effects on the environment.", Section 15064(e) states that when "a physical change is caused by economic or social effects of a project, the physical change may be regarded as a significant effect in the same manner as any other physical change resulting from the project. Alternatively, economic and social effects of a physical change may be used to determine that the physical change is a significant effect on the environment. If the physical change causes adverse economic or social effects on people, those adverse effects may be used as a factor in determining whether the physical change is significant."

Staff has used Appendix G of the State CEQA Guidelines for this analysis, which specifies that a project could have a significant effect on population, housing, and law enforcement services, schools and parks if it would:

- Induce substantial population growth in an area, either directly or indirectly;
- Displace substantial numbers of people and/or existing housing, necessitating the construction of replacement housing elsewhere; or
- Adversely impact acceptable levels of service for police protection, schools, and parks and recreation.

Staff's assessment of impacts on population, housing, police protection, schools, and parks and recreation are based on professional judgments, input from local and state agencies, and the industry-accepted two-hour commute range for construction workers and one-hour commute range for operational workers. Emergency medical services, capacities, and response times are analyzed in the **Worker Safety and Fire Protection** section of this document.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Induce Substantial Population Growth

For the purpose of this analysis, staff defines “induce substantial population growth” as workers moving into the project area because of project construction and operation, thereby encouraging construction of new homes or extension of roads or other infrastructure. To determine whether the project would induce population growth, staff analyzes the availability of the local workforce and the population within the region. Staff defines “local workforce” for project construction as those workers residing within a two-hour commute of the project site. This area includes the Santa Ana-Anaheim-Irvine Metropolitan Statistical Area (MSA[7]) (Orange County), Los Angeles-Long Beach-Glendale Metropolitan Division (Los Angeles County), and Riverside-San Bernardino-Ontario MSA (Riverside and San Bernardino counties). Workers residing in these MSA’s with greater than a two-hour commute would be considered non-local and would likely seek lodging during construction closer to the project site. Staff defines “local workforce” for project operation as workers residing within a one-hour commute of the project.

Socioeconomics Table 4 shows the historical and projected populations for the cities within the six-mile buffer plus Orange County for reference. The city of Huntington Beach is projected to grow about eight percent between 2010 and 2035, compared with a more sizable growth of fourteen percent for Orange County. Population growth within the study area is projected to be concentrated in the cities of Huntington Beach and Fountain Valley.

Socioeconomics Table 4
Historical and Projected Populations

Population	Cities within the Project Study Area					Orange County
	Total	Costa Mesa	Fountain Valley	Huntington Beach	Newport Beach	
2000[1]	423,328	108,724	54,978	189,594	70,032	2,846,289
2010[2]	440,451	109,960	55,313	189,992	85,186	3,010,232
2020[3]	460,500	113,700	58,300	199,800	88,700	3,266,000[3] 3,198,279[4]
2035[3]	469,300	114,000	59,500	205,500	90,300	3,421,000[3] 3,311,811[4]
2040[4]	-	-	-	-	-	3,321,037[4]
2050[4]	-	-	-	-	-	3,324,920[4]
Projected Population Change 2010-2035						
Number	28,849	4,040	4,187	15,508	5,114	410,768*
Percent	6.15	3.67	7.57	8.16	6.00	13.65

Note: - Data not available. *Calculated using the highest 2035 population projection.
Sources: [1]US Census 2000, [2]US Census 2010b, [3]SCAG 2012, [4]CA DOF 2013.

Socioeconomics Table 5 shows the total labor by skill for the Los Angeles-Long Beach-Glendale Metropolitan Division and Santa Ana-Anaheim-Irvine and Riverside-San Bernardino-Ontario MSAs would be more than adequate to provide construction

[7] An MSA contains a core urban area population of 50,000 or more, consists of one or more counties, and includes the counties containing the core urban area, as well as any adjacent counties that have a high degree of social and economic integration (as measured by commuting to work) with the urban core.

labor for the project. **Socioeconomics Table 6** shows the project labor needs for each of the phases of construction compared with the total labor supply in the study area.

The applicant identified the primary trades required for the project's demolition and construction as boilermakers, carpenters, electricians, ironworkers, laborers, millwrights, operators, and pipefitters (HBEP 2012a, pg. 5.10-9). The applicant has updated the project's demolition and construction schedule, including an adjustment to the phasing of these activities from the AFC (HBEP 2013t). Demolition and construction activities are estimated to begin in the first quarter of 2015 with the demolition of the existing peaker (Unit 5), fuel tank area, and the stacks from Units 3 and 4. The construction of block 1 would follow beginning in the third quarter of 2016 and the construction of block 2 would begin in the third quarter of 2018. Units 1 and 2 are scheduled for demolition beginning in the fourth quarter of 2020 and construction would conclude with the construction of buildings 33 and 34 (control and maintenance) beginning in the third quarter of 2021 and wrapping up in the third quarter of 2022. The demolition and construction schedule overlaps a few months between each phase of construction during the 7.5-year demolition and construction period for the HBEP. The demolition of Units 3 and 4 is authorized under 00-AFC-13C and is not part of the HBEP. However, the demolition of Units 3 and 4 are considered in the HBEP cumulative setting. In preparation for construction of block 2, demolition of Units 3 and 4 is estimated to begin in the first quarter of 2016, with completion in the first quarter of 2018.

The peak month reported below in **Socioeconomics Table 6** is based on the demolition and construction reported in the revised table (Table 5.10-B-R1Construction and Demolition Personnel by Month) submitted in a response to staff's data request, Socioeconomics 40 (HBEP 2013e). The applicant later updated the project schedule and some of the activities in the first phase of the project. However, as staff did not receive an update to the table presenting the demolition and construction personnel by month, staff could not update the peak labor months for each phase of demolition and construction. Staff understands from the applicant that the number of overall construction and demolition personnel would not change from what was proposed in the AFC and revised table. The applicant would employ an average of 192 workers (HBEP 2012a, pg. 5.10-9). The workforce would peak during months 82 and 83 with 236 workers.

The applicant anticipates most of the construction workforce would come from Orange County or the neighboring counties of Los Angeles and Riverside and portions from other nearby counties in Southern California. However, for the purpose of this analysis, the applicant assumed that because of the size of the local construction workforce, the majority of construction workers would come from Orange County (HBEP 2012a, pg. 5.10-10). Energy Commission staff contacted the local building and construction trades council (Los Angeles/Orange Counties Building and Construction Trades Council [BCTC]) for more information about the local construction workforce in Orange County and Los Angeles County. BCTC staff, Ron Miller and Jim Adams explained that information from their local unions shows there are more than sufficient union members available within a commuting distance of the HBEP (BCTC 2012a). In addition, BCTC staff indicated the recession has caused huge unemployment in their trades with 15 to 40 percent unemployment in their local unions.

Socioeconomics Table 5
Total Labor by Skill in the Study Area:
Santa Ana-Anaheim-Irvine MSA, Los Angeles-Long Beach-Glendale Metropolitan Division, Riverside-San Bernardino-Ontario MSA

Craft	Santa Ana-Anaheim-Irvine MSA (Orange County)				Los Angeles-Long Beach-Glendale Metropolitan Division (Los Angeles County)				Riverside-San Bernardino-Ontario MSA (Riverside & San Bernardino Counties)			
	Total Workforce (2010)	Total Projected Workforce (2020)	Growth from 2010		Total Workforce (2010)	Total Projected Workforce (2020)	Growth from 2010		Total Workforce (2010)	Total Projected Workforce (2020)	Growth from 2010	
			Number	Percent			Number	Percent			Number	Percent
Piling Crew	2,400 [1]	2,690	290	12.1	3,310 [1]	4,030	720	21.8	2,510 [1]	3,030	520	20.7
Carpenter	12,410	12,320	-90	-0.7	15,530	17,960	2,430	15.6	10,140	10,450	310	3.1
Laborer	11,900	12,700	790	6.6	23,160	27,810	4,650	20.1	11,870	13,380	1,510	12.7
Teamster	3,540 [2]	3,880	340	9.6	16,510 [2]	20,280	3,770	22.8	7,810 [2]	9,660	1,850	23.7
Electrician	4,880	5,150	270	5.5	10,310	11,360	1,050	10.2	4,000	4,520	520	13.0
Ironworker	380	390	10	2.6	1,130	1,270	140	12.4	700	670	-30	-4.3
Millwright	12,800 [3]	14,390	1,590	12.4	300	270	-30	-10.0	140	140	0	0.0
Boilermaker	59,590 [4]	61,660	2,080	3.5	240	280	40	16.7	52,650 [4]	57,040	4,390	8.3
Plumber	3,770 [5]	4,000	220	5.8	8,180 [5]	9,230	1,050	12.8	3,160 [5]	3,570	410	13.0
Pipefitter	3,770 [5]	4,000	220	5.8	8,180 [5]	9,230	1,050	12.8	3,160 [5]	3,570	410	13.0
Insulation Worker	250 [6]	270	20	8.0	93,060 [4]	108,580	15,520	16.7	52,650 [4]	57,040	4,390	8.3
Operating Engineer	2,400 [1]	2,690	290	12.1	3,310 [1]	4,030	720	21.8	2,510 [1]	3,030	520	20.7
Oiler/ Mechanic	12,800 [3]	14,390	1,590	12.4	34,450 [3]	39,640	5,190	15.1	11,260 [3]	13,030	1,770	15.7
Cement Finisher	1,760	1,930	170	9.7	2,420	3,020	600	24.8	2,420	2,570	150	6.2
Masons	1,760	1,930	170	9.7	2,420	3,020	600	24.8	2,420	2,570	150	6.2
Roofers	59,590 [4]	61,660	2,080	3.5	93,060 [4]	108,580	15,520	0.0	1,700	1,310	-390	-22.9
Sheet Metal Worker	950	960	10	1.1	2,230	2,320	90	4.0	1,440	1,580	140	9.7
Sprinkler Fitters	3,770 [5]	4,000	220	5.8	8,180 [5]	9,230	1,050	12.8	3,160 [5]	3,570	410	13.0
Painters	6,430	6,550	110	1.7	9,360	10,740	1,380	14.7	4,320	4,570	250	5.8
Sheetrockers	3,810 [8]	3,910	100	2.6	3,690 [8]	4,680	990	26.8	2,270 [8]	2,510	240	10.6

Notes: [1] Operating engineers and other construction equipment; [2] Industrial Truck and Tractor Operators; [3] Industrial Machinery Mechanics and [3] Maintenance and Repair Workers, General and [3] Maintenance Workers, Machinery; [4] Construction trades workers; [5] Plumbers, Pipefitters, and Steamfitters; [6] Insulation Workers, Floor, Ceiling, and Wall; [6] Insulation workers, mechanical.; [7] Helpers- Roofers; [8] Drywall and Ceiling Tile Installers; I & C - Control Room craft not included as data is not available.
Sources: HBEP 2012a Appendix 5.10B, Table 5.10B, EDD 2012a.

Socioeconomics Table 6
Total Labor by Skill in the Study Area MSAs/MD versus Project Labor Needs

Study Area MSA's					HBEP Construction Workforce Needs- Peak Month by Phase					
Craft	**Total Workforce (2010)**	**Total Projected Workforce (2020)**	**Growth from 2010**		**Craft**	**Demo Peaker & Tank Area**	**Construct Block 1**	**Construct Block 2**	**Demo Units 1 & 2**	**Construct Bldg 33 & 34 Control Bldg & Maintenance**
					Demolition/ Construction Period*	**Nov. 2014 to Dec. 2015 (14 mo.)**	**Feb. 2015 to June 2018 (41 mo.)**	**March 2018 to June 2020 (28 mo.)**	**Oct. 2020 to Sept. 2022 (24 mo.)**	**Aug. 2021 to Aug. 2022 (13 mo.)**
			Number	**Percent**	**Peak Month***	**June 2015**	**April 2017**	**Aug & Sept 2021**	**March 2023**	**July 2022**
Piling Crew	8,220	9,750	1,530	18.6	Piling Crew	0	10	10	0	0
Carpenter	38,080	40,730	2,650	7.0	Carpenter	0	20	25	20	8
Laborer	46,930	53,890	6,960	14.8	Laborer	30	25	30	8	10
Teamster	27,860	33,820	5,960	21.4	Teamster	8	8	8	0	4
Electrician	19,190	21,030	1,840	9.6	Electrician	0	18	25	3	10
Ironworker	2,210	2,330	120	5.4	Ironworker	0	25	12	3	8
Millwright	13,240	14,800	1,560	11.8	Millwright	0	8	6	4	0
Boilermaker	112,480	118,980	6,500	5.8	Boilermaker	4	20	15	0	0
Plumber	15,110	16,800	1,690	11.2	Plumber	0	10	14	0	4
Pipefitter	15,110	16,800	1,690	11.2	Pipefitter	0	12	12	2	6
Insulation Worker	145,960	165,890	19,930	13.7	Insulation Worker	2	8	8	3	4
Operating Engineer	8,220	9,750	1,530	18.6	Operating Engineer	3	15	15	2	4
Oiler/ Mechanic	58,510	67,060	8,550	14.6	Oiler/ Mechanic	2	4	4	0	4
Cement Finisher	6,600	7,520	920	13.9	Cement Finisher	0	10	12	0	6
Masons	6,600	7,520	920	13.9	Masons	0	0	0	0	4
Roofers	154,350	171,550	17,200	11.1	Roofers	0	6	8	0	0
Sheet Metal Worker	4,620	4,860	240	5.2	Sheet Metal Worker	0	8	8	0	6
Sprinkler Fitters	15,110	16,800	1,690	11.2	Sprinkler Fitters	0	8	8	0	5
Painters	20,110	21,860	1,750	8.7	Painters	0	6	6	0	6
Sheetrockers	9,770	11,100	1,330	13.6	Sheetrockers	0	0	0	0	6
I & C-Control Room	-	-	-	-	I & C-Control Room	0	0	0	0	8
					Total – Craft	47	205	216	45	75
					Total – Supervision	4	25	20	5	4
					Total – Workforce	51	230	236	50	79

Notes: - Data not available. *Dates, duration, and peak month based on Table 5.10.B-R1 (HBEP 2013e).
Sources: HBEP 2013e; EDD 2012a.

Energy Commission staff considers the majority of construction workers would commute daily to the project site and a small workforce, about ten percent (24 workers at peak construction), would come from outside of the local commute area.

Currently, 33 workers are employed at the Huntington Beach Generation Station (HBEP 2013g). HBEP would require 33 full-time employees during project operation; one plant manager, one operations leader, one maintenance leader, one environmental engineer, one maintenance planner, twenty power plant operators, five controls specialty workers, two mechanics and one administrative worker (HBEP 2012a, pg. 5.10-13). The number of workers by job type needed for the HBEP is different from the existing workforce at the Huntington Beach Generating Station. While it seems reasonable that some or even most of the existing workforce would be employed by the new facility, staff is not aware of any labor agreement. If any of the existing employees work at the new facility, the number of new workers needed would be less than 33. The reduction in new workforce hired would not change this staff analysis. The applicant anticipates most of the facility employees would be drawn from the local population within Orange County, although some facility employees may commute from other neighboring counties on a daily basis or choose to relocate permanently to Huntington Beach or Orange County. **Socioeconomics Table 7** presents the occupational employment projections by occupation type for the Santa Ana-Anaheim-Irvine MSA. Based on these employment projections, there would be sufficient labor to supply project operational staffing needs.

Socioeconomics Table 7
2010 to 2020 Occupational Employment Projections:
Santa Ana-Anaheim-Irvine MSA

Occupational Title	Average Annual Workforce		Employment Change		Project Operations Staff	
	2010	2020	Number	Percent		
Industrial Production Managers	2,300	2,380	80	3.5	Plant Manager	1
General and Operations Managers	25,280	25,540	260	1.0		
General and Operations Managers	25,280	25,540	260	1.0	Operations Leader	1
Supervisors of Installation, Maintenance, and Repair Workers	3,670	3,990	320	8.7	Maintenance Leader	1
Environmental Engineers	450	580	140	31.1	Environmental Engineer	1
Electrical and Electronic Equipment Mechanics, Installers, and Repairers	8,090	8,650	560	6.9	Maintenance Planner	1
Plant and System Operators	920	990	70	7.6	Power Plant Operator	20
Control and Valve Installers and Repairers, Except Mechanical Door	530	570	40	7.5	Controls Specialty	5
Electrical and Electronic Equipment Mechanics, Installers, and Repairers	8,090	8,650	560	6.9	Mechanic	2
Industrial Machinery	1,470	1,730	260	17.7		

Occupational Title	Average Annual Workforce		Employment Change		Project Operations Staff	
Mechanics						
Secretaries and Administrative Assistants	42,440	47,140	4,690	11.1	Admin	1
Office Clerks, General	31,770	36,420	4,660	14.7		

Source: EDD, 2012a.

Staff considers the majority of permanent workers would be hired locally and conservatively a small non-local workforce, about ten percent (24 workers at peak construction), may be hired from outside of the local commute area. The few non-local workers hired for the project would likely move permanently to the area. The additional new residents would not create a substantial population influx in an area where the population within the six-mile buffer totals 440,451 (see **Socioeconomics Table 4**).

Staff concludes the project's construction and operation workforces would not directly or indirectly induce a substantial population growth in the project area, and therefore, the project would create a less than significant impact.

Housing Supply

Socioeconomics Table 8 presents housing supply data for the project area. As of April 1, 2010, there were 183,480 housing units within a six-mile buffer of the project site with a vacancy of 11,850 units, representing a 6.5 percent vacancy rate. A five percent vacancy is industry-accepted as a minimum benchmark for a sufficient amount of housing available for occupancy (Virginia Tech 2006). The housing counts in the project area indicate a sufficient amount of available housing units in a six-mile buffer of the project site.

Socioeconomics Table 8
Housing Supply in the Project Area

Subject	Area			
	Cities in a Six Mile Buffer of Project Site		Orange County	
	Number	Percent	Number	Percent
OCCUPANCY STATUS				
Total housing units	183,480	100	1,048,907	100
--Occupied housing units	171,630	93.5	992,781	94.6
--Vacant housing units	11,850	6.5	56,126	5.4
VACANCY STATUS				
Vacant housing units	11,850	100	56,126	100
--For rent	4,916	41.5	25,254	45
--For sale only	1,200	10.1	8,434	15
--Other**	5,734	48.4	22,438	40.0

Notes: *Cities include Costa Mesa, Fountain Valley, Huntington Beach, and Newport Beach. **Other includes other miscellaneous vacancy status types reported in US Census QT-H1 table.
Source: US Census 2010c

Orange County has a large supply of lodging options with about 500 hotels and 55,000 rooms (AnaheimOC 2012). In Huntington Beach, there are 21 hotels/motels with total of 1,926 rooms and 177 suites (HB Marketing & Visitors Bureau 2012a). Alternative lodging options include recreational vehicle camping sites. In Huntington Beach, there are three recreational vehicle camping sites, two operate year round and the third operates from October 1st through May 31st (HB Marketing & Visitors Bureau 2012b). Between the two year-round sites, there are 147 spaces with electric, water, and dump out amenities, and 10 overflow spaces without hookups. The seasonal campsite offers 47 spaces with electric, water, and dump out amenities.

Given the large supply of lodging choices in Huntington Beach and Orange County and the estimated 10 percent non-local project construction workers (peak estimate- 24 non-local workers), staff expects no new housing would be required as a result of the project.

The project would require 33 full-time employees during project operation. The majority of these workers are expected to commute to the project site daily. Staff estimates that three workers would relocate to the immediate project area. The three new residents would not impact the housing supply in the area.

Staff concludes the project's construction and operation workforce would not have a significant adverse impact on the housing supply in the project area, Huntington Beach or Orange County and therefore, the project would create a less than significant impact.

Displace Substantial Numbers of Existing Housing and People

The HBEP is proposed on the site of the existing AES Huntington Beach Generating Station, replacing the existing power plant, so the project would not directly displace existing housing or people. The project would not induce substantial population growth or create the need for replacement housing to be constructed elsewhere, as previously discussed.

Staff concludes the project would have no impact on area housing as the project would not displace any people or necessitate the construction of replacement housing elsewhere.

Result in Substantial Physical Impacts to Government Facilities

As discussed under the subject headings below, the HBEP would not cause significant impacts to service ratios, response times, or other performance objectives relating to law enforcement, schools, or parks.

Law Enforcement

The HBEP proposed project site is located within the jurisdiction of the city of Huntington Beach Police Department (HBPD). Their single station serves as headquarters and is located at 2000 Main Street; approximately 3.5 miles from the HBEP site. HBPD's staff includes 200 sworn police officers and 115 civilians (HBPD 2012a). HBPD has a minimum standard of 10 sworn officers per shift and a service standard of 1.1 officers per 1,000 in population. Based on the 2010 population count in Huntington Beach, a staff of approximately 209 officers would meet HBPD's service standard. With 200 officers, HBPD is slightly understaffed based on their service standards. HBPD has a formal mutual aid agreement throughout Orange County law enforcement agencies (HBPD 2012a).

Staff contacted HBPD to discuss the proposed project, ascertain their ability to provide law enforcement services to the project, and solicit comments or concerns they might have about the project. Lieutenant Thomas Donnelly does not anticipate the project would trigger the need for additional law enforcement services or affect emergency response times (HBPD 2012a). Lieutenant Donnelly estimates a response time of seven minutes to the project site for priority calls and 30 minutes to the project site for non-priority calls.

The California Highway Patrol (CHP) is the primary law enforcement agency for state highways and roads. The city of Huntington Beach includes segments of the 405 freeway, Beach Boulevard (State Route 39), and Pacific Coast Highway. The CHP is the primary law enforcement agency for the 405 freeway and both CHP and HBPD serve the portions of Beach Boulevard and Pacific Coast Highway within the city of Huntington Beach. CHP services include law enforcement, traffic control, accident investigation and the management of hazardous material spill incidents. The nearest CHP office is located in Westminster (CHP 2012). The **Hazardous Materials Management** section of this document discusses response times for hazardous material spill incidents.

Based on communication with local law enforcement that would serve the project, staff concludes the project would not result in law enforcement response times being affected so that they exceed adopted response time goals. The project would not necessitate alterations to the police station or the construction of a new police station to maintain acceptable response times for law enforcement services; therefore, no associated physical impact would result. Staff concludes that for the above reasons, the project would create a less than significant impact.

Education

The HBEP site is located within the Huntington Beach Elementary City School District (HBCSD) and the Huntington Beach Union High School District (HBUHSD). HBCSD provides kindergarten through eighth grade education at six elementary schools and two middle schools with a combined enrollment of 7,124 students for the 2011/2012 school year (CDE 2012). HBUHSD provides 9th grade through12th grade education at seven high schools, one day-school, one continuation school, and a non-public non-sectarian school with a combined enrollment of 16,442 students for the 2011/2012 school year (CDE 2012). **Socioeconomics Table 9** presents the enrollment for the current and previous year, average pupil-to-teacher ratio, and average classroom size for both the school districts. Correlating data for Orange County is provided for reference.

Socioeconomics Table 9
Current School District Data

	Year	Enrollment	Pupil-to-Teacher Ratio	Average Class Size
Huntington Beach City Elementary School District	2011/2012	7,124	27.9	30.3
	2010/2011	7,002	31.6	29.0
Huntington Beach Union High School District	2011/2012	16,442	26.0	24.7
	2010/2011	16,317	27.2	25.2
Orange County*	2011/2012	502,205	25.5	28.8
	2010/2011	502,895	26.4	29.0

Notes: * Includes both elementary and high school districts.
Source: CDE 2012.

Based on the pupil-to-teacher ratio and the average class size for both school districts compared with the corresponding data for Orange County, presented in **Socioeconomics Table 9** above, both the HBCSD and HBUHSD appear slightly more crowded than Orange County. Staff contacted HBCSD staff to ascertain their district capacity. HBCSD is tightly staffed so additional students can quickly be considered overflow students and would need to be sent to another school within their district (CEC 2012i). At the elementary school level, the California Department of Education (CDE) sets a pupil to teacher cap and allows class size exceptions through waivers. This classroom cap enables Energy Commission staff to gage an elementary school district's capacity. The CDE allows a pupil to teacher ratio of 33:1 for Kindergarten and under the Education Code, 33 students are allowed in a single Kindergarten class as long as the district does not exceed an overall Kindergarten average of 31 students. HBCSD does not have a waiver for Kindergarten. HBCSD has obtained Class Size Waivers from the CDE for a 32:1 ratio for grades first through third where no class can be larger than 32 students, and a 32:1 ratio for grades fourth through eighth on average district-wide (CEC 2012i). Unlike the elementary schools, high schools do not have a pupil to teacher cap that staff can use to ascertain district capacity. Staff contacted HBUHSD staff to ascertain district capacity and was told that one high school is close to capacity (Fountain Valley High School) and the rest of the schools are not at capacity (CEC 2013a).

During construction, staff expects the majority of the labor force would be hired locally with approximately ten percent of the workforce coming from outside the local Orange County area. Based on a peak employment of 236 workers during months 88 and 89, approximately 24 new residents could temporarily relocate closer to the project site. Staff's research and communication with building and construction trades' councils has shown that construction workers do not move their families with them when working on a project. Therefore, staff does not expect a significant adverse impact to the schools from construction of the proposed project.

Thirty-thee workers are needed to operate the HBEP; most would likely be hired locally and a few would relocate closer to the project site. With an average family size of 2.99 (assuming a two-adult household) in Orange County, and an estimated three workers relocating closer to the project site, approximately three children could permanently relocate within these two school districts (US Census 2010c). Even under this scenario, the possible addition of three students when compared with the HBCSD and HBUHSD enrollments would not constitute a substantial school population growth and by extension would not necessitate the provision of new or physically altered government facilities (e.g. schools) in order to maintain acceptable service ratios.

Parks

Huntington Beach has 73 parks and public facilities totaling 778 acres, offering such amenities as playground equipment, dog park, amphitheatre, picnic facilities, exercise course, sports fields (e.g. softball and soccer), nature center, fishing, lakes, horseshoes, equestrian trails, sports courts (e.g. volleyball, basketball, tennis, racquetball, and handball) (HB City 2012b). The closest parks to the project site are Edison Community Park and Eader Park. Of the 778 acres of parkland, 208 acres are public beach. Other recreational facilities include the Edison Community Center, Huntington Central Park Sports Complex, city gym and pool, Murdy Community Center, Newland House Museum, and Rodgers Senior Center.

The city has a park standard of five acres per 1,000 people (HB City 1996). ACS five year data (2007-2011) show the estimated population in Huntington Beach as 189,744. Based on this current estimate, approximately 948 acres of parks would be needed to meet the park standard. The city currently has 778 acres of parks.

Staff’s analysis shows there would not be a large number of workers moving into the project area during project construction or operation and therefore, there would be little, if any increase in the usage of or demand for parks or other recreational facilities.

Staff concludes the project would not result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities in order to maintain acceptable service ratios, response times, or other performance objectives with respect to parks. The project would not increase the use of neighborhood or regional parks or recreational facilities to the extent that substantial physical deterioration of the facility would occur or be accelerated. The project would not necessitate the construction of new parks in the area, nor does the project propose any park facilities. For the above reasons, staff concludes the project would have a less than significant impact on neighborhood or regional parks and recreational facilities.

CUMULATIVE IMPACTS AND MITIGATION

A project may result in significant adverse cumulative impacts when its effects are cumulatively considerable; that is, when the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects [Public Resources Code Section 21083; California Code of Regulations, Title 14, Sections 15064(h); 15065 (c); 15130; and 15355].

In a socioeconomic analysis, cumulative impacts could occur when more than one project in the same area has an overlapping construction schedule, thus creating a demand for workers that cannot be met locally, or when a project’s demand for public services does not match a local jurisdiction’s ability to provide such services. An influx of non-local workers and their dependents can strain housing, schools, parks and recreation, and law enforcement services.

As a result of the large labor supply in the Orange County and Los Angeles area and the mobility of the labor supply, staff included projects in Orange County and the cities within the county that would likely employ a similar workforce to the HBEP as part of the project's cumulative impact analysis for socioeconomics.

Staff contacted planning staff with Orange County, Huntington Beach, and the cities adjacent to Huntington Beach (Costa Mesa, Newport Beach, Westminster, Santa Ana, and Fountain Valley) to develop a list of large residential development, industrial, and commercial projects that could have construction schedules overlapping with the HBEP. The applicant anticipates that if the HBEP were approved, the project's 7.5-year demolition and construction period would begin in the first quarter of 2015.

Staff considers the following projects in **Socioeconomics Table 10** part of the cumulative setting for socioeconomic resources. Construction timing is estimated based on the best information available during the preparation of this analysis.

Socioeconomics Table 10
Cumulative Projects

Project Name	Location	Status	Estimated or Actual Construction State Date & Duration	Project Description
International West Hotel East (Site C)	NW corner Harbor Blvd & Twintree Ln, Garden Grove	Approved Dec. 2012	Construction estimated to start between August and October 2013 with a 24 to 30-month construction period.	One full-service hotel and two limited-service hotels, with a total of 769 rooms.
Water Park	Garden Grove	Approved	Construction estimated to start in August 2013 with a 24 to 30-month construction period.	100,000 sq. ft. indoor water park, 600-room hotel, 4+ level parking garage.
Beach Walk	19891 & 19895 Beach Blvd., Huntington Beach	Approved, March 2012, construction permits anticipated April 2013	April 2013 with 1 to 1.5 year construction period.	173 apartment units within a four-story building.
Beach and Ellis Project- Elan Apartments	18502 &18508 Beach Blvd., Huntington Beach	Approved, demo existing gas station completed, demo permits pending for existing 2-story commercial bldg	1 to 2 year construction period	274- unit apartments, including 8,500 sq. ft. of commercial property and 48,000 sq. ft. of open space.
The Boardwalk (fka Murdy Commons)	7441 Edinger Ave, Huntington Beach	Approved Feb. 2011, construction permits anticipated May 2013	May 2013 with completion in 2016/2017	487 apartment units and 14,500 sq. ft. commercial area on 12.5 acres.
Huntington Beach Generating Station (Demolition of Units 3 & 4)	HBEP project site, Huntington Beach	Approved	First quarter 2016 to first quarter 2018 (27 months)	Demolition/ Removal of Units 3 & 4 from the existing Huntington Beach Generating Station
Huntington Beach Lofts	7302-7400 Center Ave, Huntington Beach	Approved Sept. 2008. In plan check/building permits	May 2013 with 2-year construction period	385 apartment units with 10,000 sq. ft. retail on 3.8 acres.
Pacific City	21002 Pacific Coast Highway, Huntington Beach	Approved 2004. Pending building permits	Construction estimated late 2013 / early 2014 with a 3-year construction period.	516 apartments, commercial, retail, and hotel (250-room, 8 stories).
Poseidon Desalination Plant	HBGS facility, Huntington Beach	Approved by city in 2006, pending California Coastal Commission action	Summer 2014 to Summer 2017	Seawater intake pretreatment facilities.
17872 Cartwright, Metropolis residential project	17872 Cartwright, Irvine	Approved	Late Summer/early Fall 2013 start of construction, 18 to 20-month construction period	457-unit (5+stories) residential project.
2501 Alton, Alton & Millikan Apts, Phase II	2501 Alton, Irvine	Under review	Mid 2014 with a 15-month construction period	154-unit apartments.
2801 Kelvin	2801 Kelvin, Irvine	Under review	18-month construction period	384-unit apartments.

Project Name	Location	Status	Estimated or Actual Construction State Date & Duration	Project Description
Campus and Jamboree	Northwest corner of Campus and Jamboree, Irvine	Revised application received on June 18, 2013. Phased construction and development (3 Phases). First phase submitted for approval in next few months for approximately 400 residential units.	Built in three phases. The first phase is primarily residential. Construction estimated to start on phase 1 in mid 2015 with a.20-24 month construction period. The second phase is predominantly residential, but moving into retail. Estimated 15-month const period beginning mid/end 2016. The third phase has some residential and the majority is retail. The earliest construction can begin is 2017, but existing retail is still under lease, where some leases do not expire until 2020.	Master plan, park plan, and development agreement, 1,600 residential units (5 to 6-story apartments), 17,000 sq. ft. plus primary retail in the Irvine Technology Center, and up to 23,000 square feet of accessory retail and/or residential-serving amenities, 1 acre public park, and two 0.5-acre public plazas.
Jamboree /Michelson SEC	Jamboree/ Michelson, Irvine	Approved. Estimate bldg permits mid May 2013	Mid May 2013	987-unit apartments.
Laguna Canyon Rd. & Old Laguna Canyon Rd.	Laguna Canyon Rd. and Old Laguna Canyon Rd., Irvine	Under review. Estimate early Summer hearing date	Possible Summer 2013 construction start, 1 to 2 year construction period	256 to 258 single family dwelling units.
Pacifica and Spectrum NWC	Pacifica and Spectrum, Irvine	Approved Aug. 16, 2012	Estimated 24-month construction period	573-unit apartments.
Irvine Center Drive and Alton, NWC.	Irvine Center Drive and Alton, Irvine	Approved Aug. 16, 2012	Estimated 24-month construction period	766-unit apartments.
Spectrum Lots 105, 107, and 108	Irvine Spectrum, Irvine	Approved Summer 2012. Not in hurry to build as developer is currently constructing approx. 3,000 units.	No planned date for construction, unknown construction period	Development of up to 1,350 multi-family residential units
City of Newport Beach General Plan Update EIR	North Newport Center Planned Community, Newport Beach	Amendment approved Aug. 2012	End of 2014 with an 18-month construction period	Amendment to increase unbuilt multi-family residential development allocation from 430 units to 524 units on 121 acres.
Newport Beach City Hall Reuse Project	Via Lido/Newport Blvd, Newport Beach	Mitigated Neg. Dec., Nov. 2012 for land use change. Additional enviro. review needed once development plan finalized	Early 2015 with a 1.5 to 2 year construction period	The mixed use land use that could include up to 15,000 sf. of retail commercial or a community center and up to 99,675 sf. for hotel use (120-130 rooms).

Project Name	Location	Status	Estimated or Actual Construction State Date & Duration	Project Description
Uptown Newport Village Specific Plan Project	Jamboree Rd. and Fairchild Rd., Newport Beach	Draft FEIR submitted Nov. 2012	Two phases of construction. Phase 1 2014 to 2017. Phase 2 Spring 2017 to 2021. Phase 2 construction start contingent on existing building lease set to expire March 2017, but has the option to extend the lease to 2027.	Mixed-use project with 1,244 residential units, 11,500 sq. ft. of retail, and a 2-acre park.
The 301	301 Jeanette Lane, Santa Ana	Under review	2014 with an 18 to 24 month construction period	182 residential units.
Bristol St. Widening	Bristol Street, Santa Ana	Phase 1 complete out of four phases	Phase 2 out to bid with 11-month construction period.Phase 3 June 2015 to June 2016. Phase 4 currently unfunded.	Widening to six lanes.
Grand Avenue Widening	Grand Avenue, Santa Ana	Approved	July 2015 to March 2016.	Widening to six lanes.
The Met	200 East First American, Santa Ana	Approved 2012	Fall 2013 with an 18 to 24 month construction period	271 residential units, approximately 2,000 sq. ft. retail.
Warner Avenue Widening	Warner Avenue, Santa Ana	Approved	Construction in four phases. Phase 1 Jan. 2016 to Jan 2017.	Widening to six lanes.
I-5 / Ortega Highway (SR-74) Interchange Improvement Project	I-5 & SR-74 interchange, City of San Juan Capistrano	Approved, 2009	Early 2013 until Spring 2015	Realign Ortega Highway west of the I-5 southbound ramps and widen I-5 southbound off-ramp.
I-5 Central County Improvement Project	I-5 between SR-55 and SR-57, cities of Santa Ana, Tustin and Orange.	Environmental review. Draft environmental document is estimated to be released Spring 2013	Late 2015 to late 2017	Add second carpool lane in each direction on I-5 between the SR-55 and the SR-57. Increase weave length between southbound I-5 First Street on-ramp and southbound SR-55 connector.
I-5, SR-73 to El Toro Road	I-5 between SR-73 to El Toro Rd, cities of Laguna Hills, Laguna Woods, Laguna Niguel, Mission Viejo, Lake Forest, and San Juan Capistrano.	Environmental review.	2018 to 2022	Widen the I-5 to accommodate general purpose lanes in each direction. Reestablish existing auxiliary lanes. Extend second carpool lane from El Toro Rd. to Alicia Parkway in both directions and modify ramps as needed. Reconstruct Avery Parkway and La Paz Rd. interchanges.
Avenida Pico to San Juan Creek Road	I-5 between Avenida Pico and San Juan Creek Rd, cities of San Clemente, and San Juan	Approved, 2011	2013 to 2017	Add carpool lane both directions on I-5 between Avenida Pico to San Juan Creek Road. Improve sight distance on southbound horizontal curve north of PCH. Reconstruct interchange at Avenida

Project Name	Location	Status	Estimated or Actual Construction State Date & Duration	Project Description
	Capistrano, Dana Point.			Pico. Widen northbound Avenida Pico on-ramp to three lanes. Provide dual left-turn lanes to both northbound and southbound Avenida Pico on-ramps. Add soundwalls where needed.
Interstate 405 Improvement Project	Interstate 405 between SR-73 and I-605, cities of Seal Beach, Huntington Beach, Westminster, Fountain Valley, and Costa Mesa.	Final environmental doc. being prepared	2015 to 2019	Widen I-405 between SR-73 and I-605.

HBEP would employ an average of 192 workers per month during the 7.5-year demolition and construction period. Construction workforce would peak during months 82 and 83 with 236 workers onsite. Once operational, the HBEP would permanently employ 33 workers. Approximately ten percent of the workforce is anticipated to be non-local and would likely relocate closer to the project site. **Socioeconomics Table 11** presents the total labor force for the crafts specifically needed for the construction of HBEP. As shown in the table, the labor force within the Santa Ana-Anaheim-Irvine MSA and the surrounding MSAs are more than sufficient to accommodate the labor needs for construction and operation of the HBEP including other future planned projects in the cumulative study area.

Socioeconomics Table 11
Total Labor Supply for Selected MSAs/MD

Total Labor for Selected MSAs/MD (**Construction Workforce**)*	**Total Workforce for 2010**	**Total Projected Workforce for 2020**	**Growth from 2010**	**Percent Growth from 2010**
Santa Ana-Anaheim-Irvine MSA	208,960	219,470	10,510	5.0
Los Angeles-Long Beach-Glendale Metropolitan Division	339,030	395,560	56,530	16.7
Riverside-San Bernardino-Ontario MSA	180,290	197,810	17,520	9.7
TOTALS	728,280	812,840	84,560	11.6
Total Labor for the Santa Ana-Anaheim-Irvine MSA (**Operations Workforce**)**	**Total Workforce for 2010**	**Total Projected Workforce for 2020**	**Growth from 2010**	**Percent Growth from 2010**
Operational Power Plant Workforce	116,920	127,990	11,070	9.47

Note: Total workforce includes only the crafts specifically needed for the HBEP. *See **Socioeconomics Table 6** for a list of crafts included in the total construction workforce figures. **See **Socioeconomics Table 7** for a list of occupations included in the total power plant workforce figures.
Source: EDD 2012a

As there is a large supply of lodging choices in Huntington Beach and Orange County and there is sufficient housing supply, staff does not anticipate the project’s limited increase in area population would create a significant reduction in the housing supply. A few operational workers would relocate closer to the project site (approximately ten percent) which could add about three children between the HBCSD and HBUSD. The few additional children would be a minimal addition. Staff’s proposed Condition of Certification **SOCIO-1** would ensure applicable school fees are paid by the project. The increased usage of neighborhood or regional parks or other recreational facilities as a result of the project would be minimal. The project would not result in law enforcement response times being affected so that they exceed adopted response time goals would not increase the demand for law enforcement services.

Staff concludes the proposed HBEP would not result in any significant and adverse cumulative impacts on population, housing, schools, parks and recreation, or law enforcement. **Socioeconomics Table 11** shows there is a more than sufficient workforce available for the HBEP project plus other future planned projects. Therefore, for the reasons discussed above, staff does not expect the construction or operation of the HBEP to contribute to any significant adverse cumulative socioeconomic impacts.

COMPLIANCE WITH LORS

School Impact Fees

The statutory school fees, as authorized under Section 17620 of the Education Code, are collected and distributed by the HBUHSD for both their district and the HBCSD combined. The rate for the 2011-2012 fiscal year for new commercial or industrial development for the two districts combined is $0.47 per square foot of covered and enclosed, non-residential space (Jameson & Boomer 2012). The applicable fees are calculated prior to the issuance of building permits during plan review. Based on the preliminary project design, approximately 18,200 square feet would be considered chargeable covered and enclosed space (HBEP 2012a, pg. 5.10-15). Based on this preliminary estimate, approximately $8,554 in school fees would be assessed for HBCSD and HBUHSD combined. Staff is proposing Condition of Certification **SOCIO-1** to ensure the payment of fees to these school districts. HBEP would be in compliance with Section 17620 of the Education Code through the one-time payment of statutory school impact fees to the Huntington Beach City Elementary School District and Huntington Beach Union High School District.

City of Huntington Beach LORS

Title 17 (Buildings and Construction) in the Huntington Beach municipal code outlines several development impact fees that city staff (Mr. Aaron Klemm, Energy Project Manager) indicated are applicable to the HBEP if the city were the permitting authority. Chapter 17.67 (Library Development Impact Fees), Chapter 17.74 (Fire Facilities Development Impact Fee), Chapter 17.75 (Police Facilities Development Impact Fees), and Chapter 17.76 (Parkland Acquisition and Park Facilities Development Impact Fees) are applicable to the project (CEC 2012j). The Fire Facilities Development Impact Fee is discussed in the **Worker Safety and Fire Protection** section of this document.

Staff has been working with Ms. Jane James, Senior Planner with the City of Huntington Beach and Mr. Klemm to discuss the method of assessment for the development impact fees (CEC 2013c). Mr. Klemm provided staff with the current rate (effective September 2, 2012) for the development impact fees and guidance on how the city would apply those rates if they were the permitting authority. The rate is assessed at a per square foot basis according to land use (Industrial/Manufacturing Uses). The structures of the HBEP that would be assessed include the footprint of the power blocks, HRSGs, cooling towers, and administration buildings. Staff notes that the city of Huntington Beach adopted development impact fees under Title 17 in August 2012, and has yet to assess projects similar to the proposed HBEP for development impact fees.

In addition to working with city staff, staff reviewed the general information on development impact fees (Chapter 17.73) and notes under the definitions (17.73.010), item (j), the HBEP fits the definition of an industrial development project which means "…the construction of new Floor Area on a lot in any of the Non-Residential Zoning Districts of the City." Also, under item (m), "'Development' means the addition of new dwelling units and/or new nonresidential square footage to an undeveloped, partially developed or redeveloped site and involving the issuance of a building permit and certificate of occupancy for such construction, reconstruction or use."

The information below outlines the applicable development impact fees. A development impact fee fund is established for each of the development impact fees listed below. The applicable development impact fees also include the Fire Suppression Facilities Development Impact Fee that is discussed in the **Worker Safety and Fire Protection** section of this document.

- Chapter 17.67 of the Huntington Beach municipal code - Library Development Impact Fees (HB City 2012a). There is no fee in the current adopted Huntington Beach Fee Resolution for industrial/manufacturing land uses under the Library Development Impact Fees.
- Chapter 17.75 of the Huntington Beach municipal code - Police Facilities Development Impact Fees. The intent of this development impact fee is to assure that new development in the city of Huntington Beach pay a fair share of the proportional facility and equipment and vehicle costs required to support needed police facilities and related costs necessary to accommodate such development. The current rate for the Police Facilities Development Impact Fees for industrial/manufacturing land uses is $0.133 per square foot. Staff proposes Condition of Certification **SOCIO-2** to ensure the applicable fees are paid to the city of Huntington Beach in accordance with Chapter 17.75 of the Huntington Beach municipal code.

Pursuant to the Development Impact Fee Calculation and Nexus Report for the City of Huntington Beach, dated October 2011, as amended April 27, 2012, the fees are derived from, based upon, and do not exceed the costs of providing additional police services attributable to applicable new nonresidential development.

- Chapter 17.76 of the Huntington Beach municipal code- Parkland Acquisition and Park Facilities Development Impact Fees. The intent of this development impact fee is to assure that new development in the city of Huntington Beach pay a fair share of the proportional costs for the acquisition, relocation and expansion of parkland, park development and community use facilities and related costs necessary to accommodate such development. The current rate for the Parkland Acquisition and Park Facilities Development Fees for industrial/manufacturing land uses is $0.393 per square foot. Staff proposes Condition of Certification **SOCIO-2** to ensure the applicable fees are paid to the city of Huntington Beach in accordance with Chapter 17.76 of the Huntington Beach municipal code.

Pursuant to the Development Impact Fee Calculation and Nexus Report for the City of Huntington Beach, dated October 2011, as amended April 27, 2012, the fees are derived from, based upon, and do not exceed the costs of parkland acquisition, park development and community facilities attributable to applicable new nonresidential development.

Estimated Fees for HBEP

Staff attempted to calculate the fees that would be assessed for the HBEP according to the city's determination that the footprint of the power blocks, HRSGs, cooling towers, and administration buildings would be assessed for fees. Staff calculated the combined area of the major project features, including the second floor of the new control/administration building to get an estimate of the total assessable area of the

HBEP (HBEP 2012n, Table 5.13-1R1, pgs. 82-83). The estimated assessable area would be 217,438 square feet.

The estimated development impact fee for police facilities would be approximately $28,919.25. The estimated development impact fee for parkland acquisition and park facilities would be approximately $85,453.13. The combined development impact fees would total $114,372.28.

Staff requests the applicant and city of Huntington Beach staff submit calculations for development impact fees for the HBEP according to the city's determination that the footprint of the power blocks, HRSGs, cooling towers, and administration buildings would be used to assess fees. The applicant and city's submittals in response to staff's request would be included in the FSA.

NOTEWORTHY PUBLIC BENEFITS

For the purpose of this analysis, staff defines noteworthy public benefits to include changes in local economic activity and local tax revenue that would result from project construction and operation. To assess the gross economic value of the proposed project, the applicant developed an input-output model using proprietary cost data and the IMPLAN Professional 3.0 software package. The assessment used Orange County as the unit of analysis, assuming that expenditures made outside of the county represent economic leakage. Impact estimates reflect two different scenarios representing the demolition and construction phase and the operations phase of the project. For both phases, the applicant estimated the total direct, indirect, and induced economic effects on employment and labor income.[8] Direct economic effects represent the employment, labor income, and spending associated with demolition, construction, and operation of the project. Indirect economic effects represent expenditures on intermediate goods made by suppliers who provide goods and services to the project. Induced economic effects represent changes in household spending that occur due to the wages, salaries, and proprietor's income generated through direct and indirect economic activity.

There are several important caveats to note with regard to input-output analysis and the IMPLAN model. First, the purpose of the analysis is to construct a reasonable profile of the project related investments and to demonstrate the overall magnitude and direction of the economic benefits that would accrue to the surrounding economy. The resulting estimates do not represent a precise forecast, but rather an approximate estimate of the overall economic effect. The IMPLAN model is a static model, meaning that it relies on inter-industry relationships and household consumption patterns, as they exist at the time of the analysis. This is important given that demolition of existing peaker (unit 5), fuel tank, and the stacks from Units 3 and 4 would not begin until the first quarter of 2015 and completion of construction would not occur until the third quarter of 2022. The

[8] The Minnesota IMPLAN Group (2012) defines Economic Output as "the value of industry production." In the manufacturing sector, output is equal to total sales, minus inventory changes. For the service sectors, output is equal to total sales. In the retail and wholesale trade sectors, output is equal to the gross margin (i.e. total sales, minus the cost of goods sold).

model also assumes that prices remain fixed, regardless of changes in demand, and that industry purchaser-supplier relationships operate in fixed proportions. The model does not account for substitution effects, supply constraints, economies of scale, demographic change, or structural adjustments.

Pages 5.10-11 to 5.10-14 of the AFC summarize the investment, or expenditure, profile used for the applicant's IMPLAN analysis. According to these figures, the total anticipated capital cost is between $500 and $550 million. This includes costs associated with demolition of existing units 1, 2, and 5, as well as construction of Power Blocks 1 and 2. Materials and equipment costs for demolition and construction would equal around $61.2 million. Around 74 percent of the materials and equipment spending, roughly $45 million, would occur within Orange County. Based on an average hourly rate of $83 per worker, the total labor cost (including benefits) for demolition and construction would equal $241.4 million. Around 90 percent of the demolition and construction labor would come from within Orange County. This would equal $217.3 million in gross labor income to Orange County workers. According to the applicant, annual operation of the proposed project would require an estimated 33 full-time equivalent employees. At an estimated average salary of $131,920 per year, this would equal roughly $4.35 million per year in operations payroll (including benefits). Annual non-payroll operations and maintenance (O&M) costs for the HBEP would equal around $4.45 million. While the applicant assumes that 100 percent of the annual O&M expenditures would be made within Orange County, they acknowledge the likelihood that some portion of the annual O&M budget would be spent in neighboring counties. Therefore, staff anticipates that the benefits to Orange County of non-payroll O&M spending may be somewhat less than estimated.

Socioeconomics Table 12 reports the applicant's estimates of the economic impacts that would accrue to Orange County due to project construction and operation. Note that the table reports economic impact estimates on an annualized basis. All jobs are reported in job-years and must be interpreted with caution.[9] During the 90-month construction period, the project would generate almost 380 jobs (direct, indirect, and induced) and $251 million in labor income (direct, indirect, and induced). The average annual economic impact of project operations would equal roughly 73 jobs (direct, indirect, and induced) and $7.4 million in labor income (direct, indirect, and induced).

[9] One job-year is the equivalent of one full-time job held for a period of one year. For example, this could equal one full-time job held for 12 months, two full-time jobs held for six months, three full-time jobs held for four months, or two half-time jobs held for one-year, and so on.

Socioeconomics Table 12
HBEP Economic Benefits (2012 dollars)

Total Fiscal Benefits	
Estimated annual property taxes	$5.41 million to $5.96 million
State and local sales taxes:	
Construction	$3.5 million
Operation	$244,668
School Impact Fees	$8,554 est. total HBCSD and HBUHSD combined
Total Non-Fiscal Benefits	
Total capital costs	$500 million to $550 million
Construction payroll (incl. benefits)	$241.1 million
Operations payroll (incl. benefits)	$4.35 million
Construction materials and supplies	$61.15 million
Operations and maintenance supplies	$4.45 million
Total Direct, Indirect, and Induced Benefits	
Estimated Direct Benefits	
Construction Jobs	192 (average)
Operation Jobs	33
Estimated Indirect Benefits	
Construction Jobs	24
Construction Income	$1.2 million
Operation Jobs	7
Operation Income	$1.3 million
Estimated Induced Benefits	
Construction Jobs	163
Construction Income	$8.4 million
Operation Jobs	33
Operation Income	$1.7 million
Summary of Local Benefits (to Orange County)[1]	
Estimated Direct Benefits	
Construction payroll (incl. benefits) (90 percent to Orange County)	$217.3 million
Operations payroll (incl. benefits) (74 percent to Orange County)	$4.34 million
Construction materials & supplies (100 percent to Orange County)	$45.02 million
Operations & maintenance supplies (100 percent to Orange County)	4.45 million

Note: [1] Based on applicant's estimates. Source: HBEP 2012a.

PROPERTY TAX

The Board of Equalization (BOE) has jurisdiction over the valuation of a power-generating facility for tax purposes, if the power plant produces 50 megawatts (MW) or greater. For a power-generating facility producing less than 50 MW, the county has jurisdiction over the valuation. The HBEP would be a 939 MW power generating facility, therefore, BOE is responsible for assessing property value. The property tax rate is set by the Orange County Auditor-Controller's office.

Assuming a capital cost of $500 to 550 million and a property tax rate consistent with the current rate for the existing Huntington Beach Generation Station property (1.08299 percent), the project would generate approximately $5.41 to 5.96 million in property tax revenues during the first operation year of the project (HBEP 2012a, pg. 5.10-14). The estimated revenue includes the assessment of the HBEP only, which would replace the existing assessed Units 1 through 5 upon demolition. The increase in property taxes resulting from the HBEP project would be about eight to nine percent of Huntington Beach's property tax revenues for FY 2011-12 (HB City 2011, pg. 443).

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Energy Commission staff contacted the Huntington Beach Police Department (Lieutenant Thomas Donnelly) to discuss the proposed project, ascertain the department's ability to provide law enforcement services to the project, and solicit comments or concerns the department might have about the project. Lieutenant Donnelly's comments are addressed in this analysis. Energy Commission staff also contacted the Los Angeles/Orange Counties Building and Construction Trades Council (Ron Miller and Jim Adams) to discuss the proposed project, enquire about how much of project's workforce would seek lodging closer to the project, and solicit comments or concerns the construction and trades council might have about the project and the associated labor needs. Ron Miller and Jim Adams' comments are addressed in this analysis.

PROPOSED FINDINGS OF FACT

Staff concludes the HBEP would not cause a significant adverse direct, indirect, or cumulative socioeconomic impact as result of the construction or operation of the proposed project, for the following reasons:

1. The project's construction and operation workforces would not directly or indirectly induce a substantial population growth in the project area.
2. The project's construction and operation workforce would not have a significant adverse impact on housing within the project area and would not displace any people or housing, or necessitate construction of replacement housing elsewhere.
3. The project would not result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities in order to maintain acceptable service ratios, response times, or other performance objectives with respect to:
    - law enforcement service
    - education
    - parks
4. The project would not increase the use of existing neighborhood and regional parks or recreational facilities to the extent that substantial physical deterioration of the facility would occur or be accelerated, and new parks are not proposed by or needed because of the project.

5. The project’s impacts would not result in any significant adverse cumulative impacts on population, housing, schools, parks and recreation, or law enforcement. There is a more than a sufficient workforce available for the HBEP project plus other future planned projects. Therefore, staff does not expect the construction or operation of the HBEP to contribute to any significant adverse cumulative socioeconomic impacts.

PROPOSED CONDITIONS OF CERTIFICATION

SOCIO-1 The project owner shall pay the one-time statutory school facility development fees to the Huntington Beach Union High School District as required by Education Code Section 17620.

Verification: At least 30 days prior to the start of project construction, the project owner shall provide to the Compliance Project Manager (CPM) proof of payment to the Huntington Beach Union High School District of the statutory development fee.

SOCIO-2 The project owner shall pay the following one-time Development Impact Fees to the city of Huntington Beach as required by Chapter 17 of the Huntington Beach municipal code:

- Police Facilities Development Impact Fees
- Parkland Acquisition and Park Facilities Development Impact Fees

Verification: At least 30 days prior to commercial operation, the project owner shall provide to the Compliance Project Manager (CPM) proof of payment to the city of Huntington Beach of the required Development Impact Fees.

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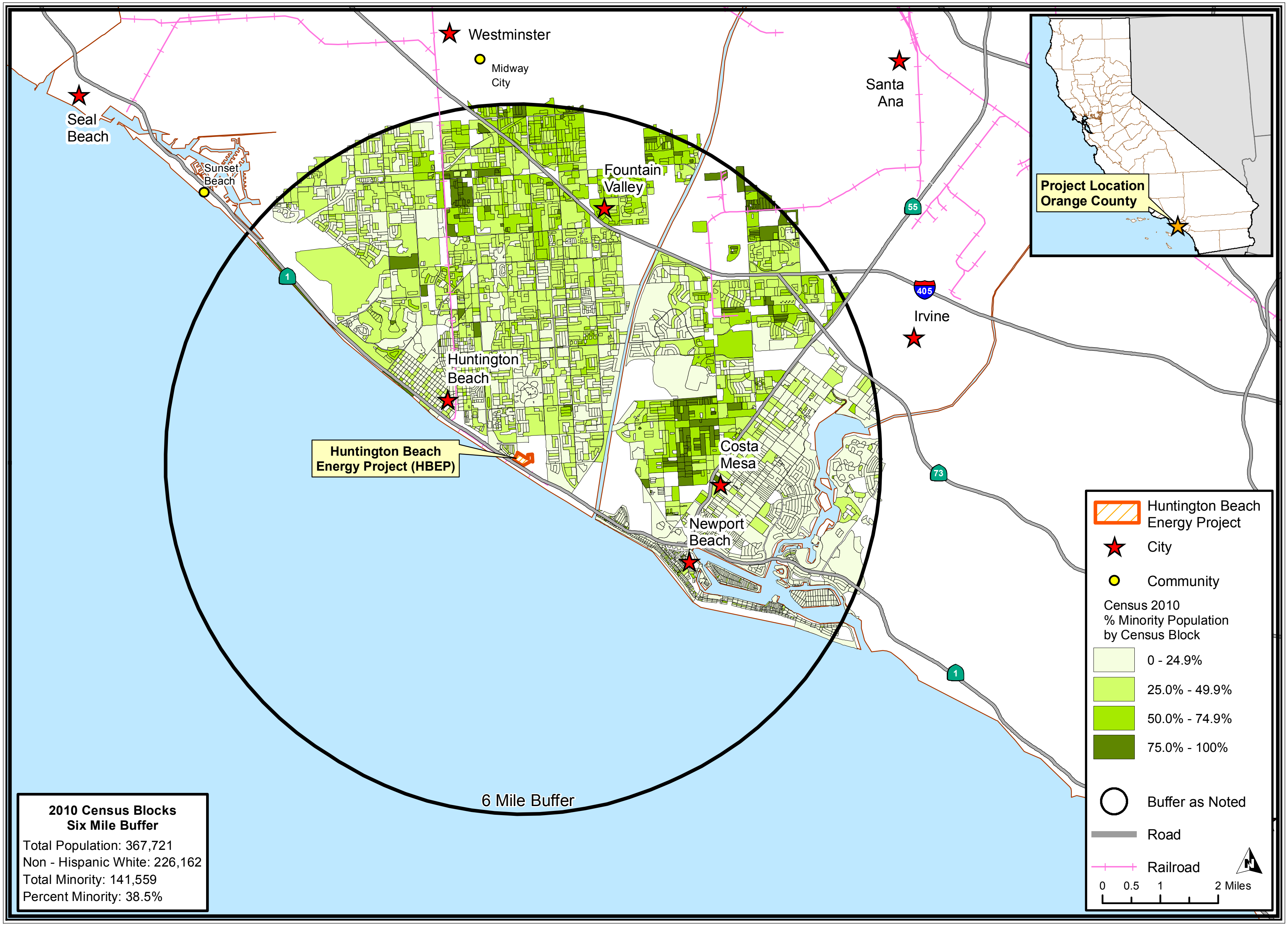
SOCIOECONOMICS - FIGURE 1

Huntington Beach Energy Project - Census 2010 Minority Population by Census Block - Six Mile Buffer



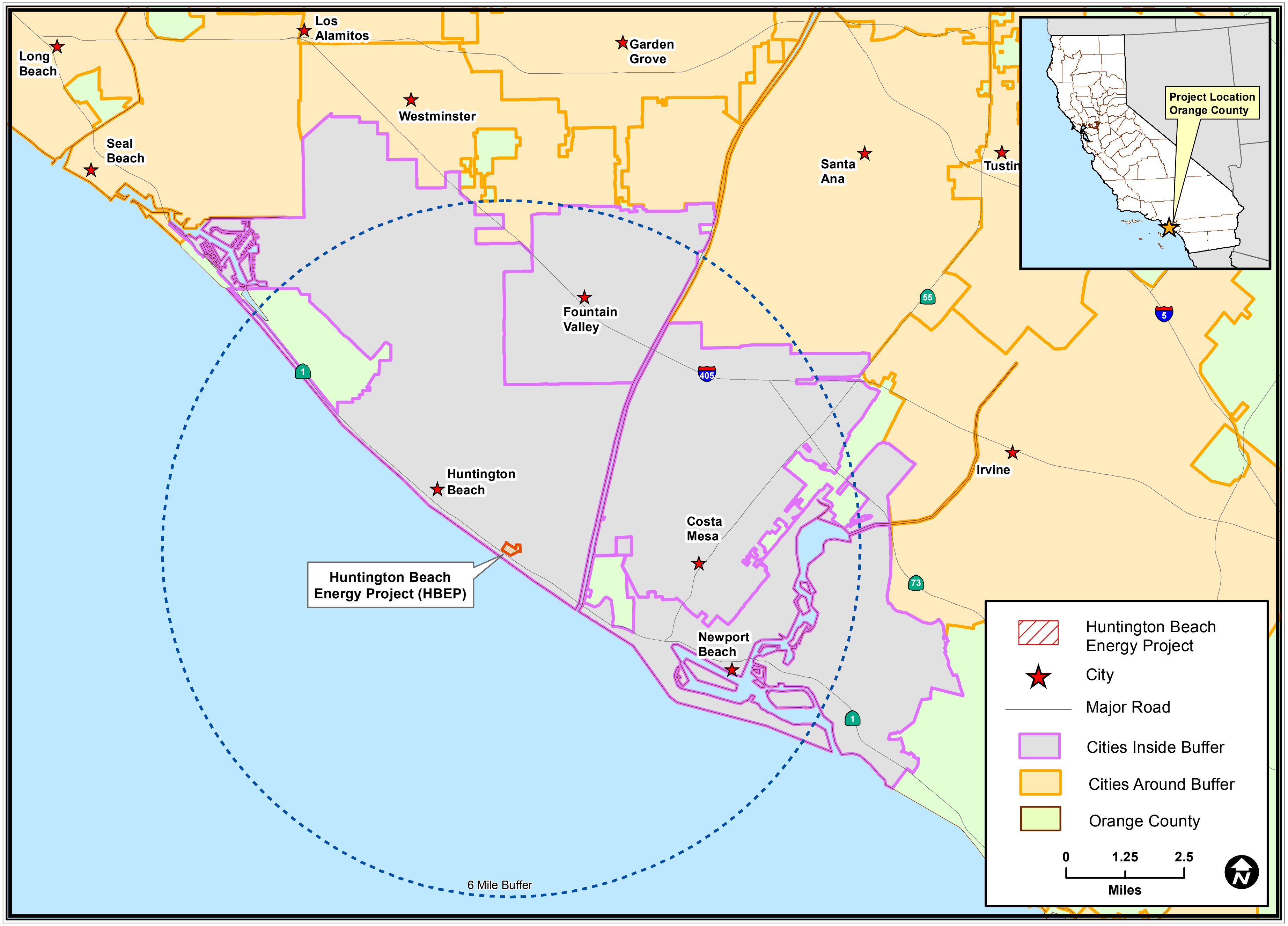
SOCIOECONOMICS

CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Multinet, Census 2010 - PL94-171, Open Street Map City Data March 2013.

SOCIOECONOMICS - Figure 2

Huntington Beach Energy Project - Cities In and Around the Six Mile Buffer



SOCIOECONOMICS

CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Census 2010 - PL94-171, OpenStreetMap March 2013.

SOIL AND WATER RESOURCES

Mike Conway, P.G.

SUMMARY OF CONCLUSIONS

Based on the assessment of the proposed Huntington Beach Energy Project (HBEP), California Energy Commission (Energy Commission) staff concludes that:

- The proposed project would reduce the amount of water used relative to baseline conditions (Huntington Beach Generating System). The reduction in water use would be about 175 acre feet per year (AFY), which would result in additional supplies for other beneficial uses.
- The proposed project would result in a 0.16 million gallon per day (mgd) reduction in industrial waste water volume to the Pacific Ocean and a similarly proportional decrease in pollutant loading.
- The proposed project would result in the elimination of once through cooling from the existing Huntington Beach Generating System. Once-through cooling water from the Pacific Ocean would be replaced by City of Huntington Beach municipal supply water.
- The proposed site has a long industrial history and would not require much additional soil disturbance for the new facilities. The proposed project would therefore result in minimal losses to soil resources. Though some small losses in topsoil are expected during construction and operation from wind and water erosion, onsite management of stormwater runoff and sediment erosion as proposed by staff in **SOIL&WATER-1** and **SOIL&WATER-3** would adequately minimize soil loss.
- Staff proposes Condition of Certification **SOIL&WATER-1,** which would require the proposed project to comply with the Clean Water Act and obtain discharge permits for construction through the State Water Resources Control Board. This condition would ensure that the impacts to waters of the United States from construction would be less than significant.
- Staff proposes Condition of Certification **SOIL&WATER-2**, which would require the proposed project to comply with Permit Order No. R8-2009-0003, NPDES NO. CAG998001, if hydrostatic waters are discharged to waters of the US. This condition would ensure that the impacts to waters of the United States from hydrostatic testing would be less than significant.
- Staff proposes Condition of Certification **SOIL&WATER-3,** which would require the proposed project to comply with the Clean Water Act and obtain discharge permits for operation through the State Water Resources Control Board. This condition would ensure that the impacts to waters of the United States from dewatering discharge would be less than significant.
- Groundwater at the site is relatively shallow and potentially contaminated by petroleum products of by-products. Trench and foundation excavations will likely encounter shallow groundwater and dewatering would be required for stabilization. If the applicant engages in dewatering, staff would require that the applicant comply with Condition of Certification **SOIL&WATER-4**, which would the applicant to apply

for coverage under a permit that would allow for the discharge of petroleum-contaminated water.

- Staff proposes Condition of Certification **SOIL&WATER-5**, which would require the proposed project to comply with the City of Huntington Beach code, Title 14 Water and Sewers. This condition would ensure that connections to the city's water and sewer system are completed appropriately and that annual fees are paid to the city.
- Staff proposes Condition of Certification **SOIL&WATER-6**, which would limit the proposed project's water use to 115 acre-feet per year and require regular water use reporting to the Commission.
- Staff proposes Condition of Certification **SOIL&WATER-7**, which would require the applicant to install water meters.
- The proposed project is located in Zone X and protected from the 1 percent annual chance of flooding (100-year flood) by an accredited levee along the Huntington Beach Channel.
- Recent Energy Commission studies show the Huntington Beach vicinity is at increased risk of flooding due to relative sea level rise. However the proposed site would be sufficiently above sea level to ensure power plant reliability. Even with high-end estimates of relative sea-level rise of 61 centimeters (2.0 feet) by 2050 (relative to 2000) (NAS, 2012), the site would still be about 2.0 feet above the current (2012) 100-year floodplain (FEMA, 2012).
- Storm surge events in the Pacific Ocean could cause ocean water level increases of up to three feet during a 100-year return level event. Coupled with projected relative sea-level rise estimates, this level of storm surge could reduce the proposed site's flood protection. If current levee protection is not augmented, the FEMA zone designation has potential to change from Zone X (above the 100-year floodplain) to Zone AE (below the 100-year floodplain).
- The proposed project would include use of air cooled condensers for cooling of the steam cycle. This technology significantly reduces the potential for use of water supplies and is encouraged in accordance with the Energy Commission's water policy. Development of alternative water supplies for remaining industrial uses does not appear to be feasible. In addition, the project would use a number of systems to reuse wastewater and reduce wastewater volume. Staff believes the project water use is consistent with Energy Commission water policy.
- The proposed project helps the entire Huntington Beach Power Station move away from once-through-cooling (OTC). SWRCB's Resolution No. 2010-0020 and adoption of a Policy for the Use of Coastal and Estuarine Waters for Power Plant Cooling (OTC Plan), requires all coastal power plants that utilize OTC to meet new performance requirements (Best Technology Available [BTA]) through a reduction in intake volume and velocity. The proposed project helps achieve the goals of the OTC Plan through dry-cooling and reduced discharge.

INTRODUCTION

The California Environmental Quality Act (CEQA) requires that the significant adverse environmental effects of a proposed project be identified and that such effects be eliminated or mitigated to the extent feasible (Pub. Resources Code, § 21002). CEQA defines a "significant effect" on the environment as a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including … water" (Cal. Code Regs., tit. 14, § 15382).

This section of the Preliminary Staff Assessment (PSA) analyzes the potential effects on soil and water resources by the proposed HBEP. This assessment incorporates information gathered by the Energy Commission staff and focuses on the potential for HBEP to:

- cause accelerated wind or water erosion and sedimentation;
- exacerbate flood conditions in the vicinity of the project;
- adversely affect surface or groundwater supplies;
- degrade surface or groundwater quality; and,
- comply with all applicable laws, ordinances, regulations and standards (LORS) and state policies.

Where the potential for impacts is identified, staff proposes mitigation measures to reduce the significance of the impact and, as appropriate, recommends conditions of certification to ensure that any impacts are less than significant and the project complies with all applicable LORS.

LAWS, ORDINANCES, REGULATION, AND STANDARDS

The following federal, state, and local environmental LORS in **Soil & Water Table 1** listed for the HBEP and similar facilities require the best and most appropriate use and management of groundwater resources. Additionally, the requirements of these LORS are specifically intended to protect human health and the environment. Actual project compliance with these LORS is a major component of staff's determination regarding the significance and acceptability of the HBEP with respect to the use and management groundwater resources.

Soil & Water Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Federal LORS	
Clean Water Act (33 U.S.C. Section 1257 et seq.)	The Clean Water Act (CWA) (33 USC § 1257 et seq.) requires states to set standards to protect water quality, which includes regulation of storm water and wastewater discharges during construction and operation of a facility. California established its regulations to comply with the CWA under the Porter-Cologne Water Quality Control Act.
State LORS	
California Constitution, Article X, section 2	The California Constitution requires that the water resources of the state be put to beneficial use to the fullest extent possible and states that the waste, unreasonable use or unreasonable method of use of water is prohibited.
Senate Bill 610 (Water Code Sections 10910-10915)	Signed into law in 2001 amending Sections 10910-10915 of the California Water Code. Requires public water systems to prepare water supply assessments (WSA) for certain defined development projects subject to the California Environmental Quality Act. Lead agencies determine, based on the WSA, whether protected water supplies will be sufficient to meet project demands along with the region's reasonably foreseeable cumulative demand under average-normal-year, single-dry-year, and multiple-dry-year conditions.
The Porter-Cologne Water Quality Control Act of 1967, California Water Code Section 13000 et seq.	Requires the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs) to adopt water quality criteria to protect state waters. Those regulations require that the RWQCBs issue waste discharge requirements (WDRs) specifying conditions for protection of water quality as applicable. Section 13000 also states that the state must be prepared to exercise its full power and jurisdiction to protect the quality of the waters of the state from degradation. Although Water Code 13000 et seq. is applicable in its entirety, the following specific sections are included as examples of applicable sections.
California Water Code Section 13240, 13241, 13242, 13243, & Water Quality Control Plan for the Santa Ana River Basin (Basin Plan)	The Basin Plan establishes water quality objectives that protect the beneficial uses of surface water and groundwater in the Region. The Basin Plan describes implementation measures and other controls designed to ensure compliance with statewide plans and policies and provides comprehensive water quality planning.
California Water Code Section 13260	This section requires filing, with the appropriate RWQCB, a report of waste discharge that could affect the water quality of the state unless the requirement is waived pursuant to Water Code section 13269.
California Water Code Section 13550	Requires the use of recycled water for industrial purposes when available and when the quality and quantity of the recycled water are suitable for the use, the cost is reasonable, the use is not detrimental to public health, and the use will not impact downstream users or biological resources.
Water Recycling Act of 1991 (Water Code 13575 et. seq.)	The Water Recycling Act states that retail water suppliers, recycled water producers, and wholesalers should promote the substitution of recycled water for potable and imported water in order to maximize the appropriate cost-effective use of recycled water in California.

Water Conservation Act of 2009 (Water Code 10608 et. seq)	This 2009 legislative package requires a statewide 20% reduction in urban per capita water use by 2020. It requires that urban water retail suppliers determine baseline water use and set reduction targets according to specified requirements, and requires agricultural water suppliers prepare plans and implement efficient water management practices.
California Code of Regulations, Title 17	Requires prevention measures for backflow prevention and cross connections of potable and non-potable water lines.
California Code of Regulations, Title 20, Division 2, Chapter 3, Article 1	The regulations under Quarterly Fuel and Energy Reports (QFER) require power plant owners to periodically submit specific data to the California Energy Commission, including water supply and water discharge information.
SWRCB Order 2009-0009-DWQ	The SWRCB regulates storm water discharges associated with construction affecting areas greater than or equal to 1 acre to protect state waters. Under Order 2009-0009-DWQ, the SWRCB has issued a National Pollutant Discharge Elimination System (NPDES) General Permit for storm water discharges associated with construction activity. Projects can qualify under this permit if specific criteria are met and an acceptable Storm Water Pollution Prevention Plan (SWPPP) is prepared and implemented after notifying the SWRCB with a Notice of Intent.
SWRCB Order 97-03-DWQ	The SWRCB regulates storm water discharges associated with several types of facilities, including steam electric generating facilities. Under Order 97-03-DWQ, the SWRCB has issued a NPDES General Permit for storm water discharges associated with industrial activity. Projects can qualify under this permit if specific criteria are met and an acceptable SWPPP is prepared and implemented after notifying the SWRCB with a Notice of Intent.
Santa Ana Regional Water Quality Control Board, Permit Order No. R8-2009-0003, NPDES NO. CAG998001	The Santa Ana Regional Water Quality Control Board issued this order to regulate discharges to surface waters that pose a *de minimus* threat.
Local LORS	
City of Huntington Beach – Code Chapter 14.36 - Sewer System Service Connections, Fees, Charges, and Deposits	Defines local fees for sewer connections and services.
State Policies and Guidance	
Integrated Energy Policy Report (Public Resources Code, Div. 15, Section 25300 et seq.)	In the 2003 Integrated Energy Policy Report (IEPR), consistent with SWRCB Policy 75-58 and the Warren-Alquist Act, the Energy Commission clearly outlined the state policy with regards to water use by power plants, stating that the Energy Commission would approve the use of fresh water for cooling purposes only where alternative water supply sources and alternative cooling technologies are shown to be “environmentally undesirable” or “economically unsound.”

SWRCB Res. 2009-0011 (Recycled Water Policy)	This policy supports and promotes the use of recycled water as a means to achieve sustainable local water supplies and reduction of greenhouse gases. This policy encourages the beneficial use of recycled water over disposal of recycled water.
SWRCB Res. 75-58	The principal policy of the SWRCB that addresses siting of energy facilities is the Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Power Plant Cooling, adopted by the Board on June 19, 1976, by Resolution 75-58. This policy states that use of fresh inland waters should only be used for cooling if other sources or other methods of cooling would be environmentally undesirable or economically unsound.
SWRCB Res. 77-1	SWRCB Resolution 77-1 encourages and promotes recycled water use for non-potable purposes and use of recycled water to supplement existing surface and groundwater supplies.

PROJECT DESCRIPTION

The HBEP would be located in northwestern Orange County, California. The site is adjacent to Huntington Beach State Park and is approximately 900 feet inland from the Pacific Ocean. See **Soil & Water Figure 1** for a site location map.

The HBEP is a proposed natural gas-fired, combined-cycle, air-cooled, 939-megawatt (MW) electrical generating facility that would replace the AES Huntington Beach Generating Station (HBGS). HBEP would consist of two independently operating, three-on-one, combined-cycle gas turbine power blocks. Each power block would consist of three-gas-fired combustion turbine generators (CTG), three supplemental fired heat recovery steam generators (HRSG), one steam turbine generator (STG), an air-cooled condenser, and related ancillary equipment. Other equipment and facilities to be constructed and shared by both power blocks would include natural gas compressors, water treatment facilities, emergency services, and administration and maintenance buildings.

Construction would commence with the removal of the existing Huntington Beach Generating Station unit 5 and onsite fuel tanks. Unit 5 demolition is scheduled to begin the 1st quarter of 2015; its removal will clear necessary space to construct the new Block 1, which is expected to take approximately 30 months. Demo of HBGS Units 3 and 4 would take place during the 1st quarter of 2016, with construction taking approximately 27 months. Block 1 construction would begin between mid 2016 and mid 2018 and Block 2 construction would begin between mid 2018 and mid 2020. HBGS Units 1 and 2 demolition would begin between late 2020 and late 2022 (TN 69961) after Blocks 1 and 2 would be built and be operational.

Construction would disturb about 26 acres between on- and off-site construction and staging areas. Construction laydown would require 22 acres, split between the Huntington site (on-site 6 acres) and the Alamitos Generating Station (off-site 16 acres).

Water Supply

The city of Huntington Beach would provide the proposed project both its process and domestic water through an existing 8-inch pipeline that supplies the existing Huntington Beach Generating Station. The city has already provided the applicant a will-serve letter indicating that service is available. The proposed project would use about 115 AFY, assuming 6,665 hours of operation (HBEP 2012a). The expected range in water use rates would be between 94 and 190 gallons per minute (gpm). Water from the city would be fed into a 442,500-gallon service water/fire tank. This tank would therefore be capable of providing up to 78 hours of operational water under average use conditions of 94 gpm (HBEP 2012a).

Construction would require potable water for dust suppression. Average water use during construction would be about 18,000 gallons per day (gpd) and around 24,000 gpd during hydrostatic testing and commissioning. Commissioning is expected to take about 60 days. Average annual water use is not expected to exceed 22 AFY.

The proposed HBEP would employ 33 full-time employees. The expected water use for domestic purposes would be about 1 gpm, or about 1.2 AFY (HBEP 2012a).

The city's water supply source is part groundwater (62 percent) and part imported surface water (38 percent). Groundwater is provided to the city by 10 groundwater wells operated by the Orange County Water District. The Metropolitan Water District provides Huntington Beach with surface water supplies sourced from the Colorado River and the State Water Project (Huntington, 2013).

Process Waste Water

The project would collect wash-down, general facility, and equipment floor drains and sumps and route them to an oil/water separator system. Wastewater streams that are unlikely to contain oil and grease, such as the cooler blowdown units and reverse osmosis reject, would bypass the oil/water separator. These process wastewaters would be discharged to the existing Huntington Beach Generating System outfall, directly to the Pacific Ocean. Discharge rates would range between 29 and 160 gpm, with average annual discharge equaling about 11.6 million gallons per year (HBEP 2012a).

Sanitary Waste Water

Sanitary wastewater would be discharged to the city's sanitary sewer system and treated by Orange County Sanitation District Facilities. A discharge of approximately 0.16 gpm is expected from the proposed project during all operating conditions. The city of Huntington Beach provided the applicant with a will-serve letter, indicating the availability of this service.

Stormwater

The proposed project would use the existing site stormwater drainage system. Stormwater in contact with industrial equipment is routed through the oil/water separator system where it would comingle with process discharge water before discharging to the Pacific Ocean. Non-contact stormwater will discharge to one of two onsite retention basins.

SETTING

Groundwater

The proposed project site is in the Peninsular Ranges Physiographic Province along the California coastline, south of the Los Angeles and Orange county line. This province consists of northwest-trending synclinal trough that contains a thick sequence of water bearing marine and continental sediments (Edwards et al., 2009). The southeast most portion of this coastal aquifer system begins at the Orange county line and ends at the San Joaquin Hills in the south and the Santa Ana Mountains in the East. This portion of the coastal aquifer system is identified as the Coastal Plain of Orange County Groundwater Basin (hereafter referred to as Basin), which encompasses a 350 square mile area (DWR, 2004). The Basin underlies the lower Santa Ana River watershed (OWP, 2012).

Depth to water at the site ranges from 5 to 12 feet below land surface. The groundwater gradient beneath the site is toward the northwest at about 0.002 foot per foot. The reported seepage velocity is about one foot per day (Jamison and Associates, 2012).

Surface Water

Surface watersheds in California are divided into management areas by the state's Regional Water Boards based on political and physiographic boundaries. The HBEP would be within the area regulated by the Santa Ana Regional Water Quality Control Board (RWQCB). The proposed site is located within the Lower Santa Ana River hydrologic area and is part of the East Coastal Plain hydrologic sub-area. The greater Santa Ana watershed that encompasses these hydrologic areas is bounded by consolidated rocks exposed on the north in the Puente and Chino Hills, on the east in the Santa Ana Mountains, and on the south in the San Joaquin Hills. This hydrologic basin is bounded by the Pacific Ocean on the southwest and by a low topographic divide approximated by the Orange County - Los Angeles County line on the northwest. The East Coastal Plain hydrologic sub-area covers approximately 304 square miles and receives approximately 12.7 inches of rain annually (OWP, 2012).

The Magnolia Marsh wetland preserve is along the southeastern border of the site. Other nearby wetland preserves include the Brookhurst Marsh, Talbert Marsh, and Newland Marsh. The Huntington Beach Channel runs along the northeastern boundary of the HBEP site and the Talbert Channel is located approximately 0.5 mile to the east of the site. The Santa Ana River runs north to south approximately 1.25 miles to the east of the project site. The Santa Ana River's headwaters are located in the San Bernardino Mountains and the river travels through Orange County and portions of Riverside, San Bernardino, and Los Angeles counties before reaching its confluence with the Pacific Ocean (HBEP 2012a).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

This section provides an evaluation of the expected direct, indirect, and cumulative impacts to soil and water resources that could be caused by construction, operation, and maintenance of the HBEP. Staff's analysis consists of the following steps: establishing "thresholds of significance" used to determine if there is a potentially “significant” impact, gathering data related to construction and operation of the project, screening the data against the thresholds of significance then reaching a conclusion to determine whether or not the project presents a potentially “significant” impact. If staff determines there is a significant impact then staff evaluates the applicant’s proposed mitigation for sufficiency and staff may or may not recommend additional or entirely different mitigation measures that are potentially more effective than those proposed by the applicant. Mitigation is designed to reduce the effects of potentially significant HBEP impacts to a level that is less than significant.

Soil Resources

Staff evaluated the potential impacts to soil resources including the effects of construction and operation activities that could result in erosion and downstream transportation of soils and the potential for contamination to soils and groundwater. There are extensive regulatory programs in effect that are designed to prevent or minimize these types of impacts. These programs are effective and, absent unusual circumstances, an applicant’s ability to identify and implement BMPs to prevent erosion or contamination is sufficient to ensure that these impacts would be less than significant. The LORS and policies presented in **Soil & Water Table 1** were used to determine the significance of HBEP impacts.

Water Resources

Staff evaluated the potential of HBEP to cause a significant depletion or degradation of surface water and groundwater resources. Staff considered compliance with the LORS and policies presented in **Soil & Water Table 1** and whether there would be a significant impact under the California Environmental Quality Act (CEQA).

To determine if significant impacts to soil or water resources would occur, the following questions were addressed. Where a potentially significant impact was identified, staff or the applicant proposed mitigation to ensure the impacts would be less than significant.

- Would the project violate any water quality standards or waste discharge requirements?
- Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level?
- Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?
- Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?
- Would the project create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?
- Would the project otherwise substantially degrade water quality?

- Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?
- Would the project place within a 100-year flood hazard area structures which would impede or redirect flood flows?
- Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?
- Would the project be inundated by seiche or tsunami?
- Would the project result in substantial soil erosion or the loss of topsoil?
- Does the project have impacts that are individually limited, but cumulatively considerable?

DIRECT/INDIRECT IMPACTS AND MITIGATION

A discussion of the direct and indirect HBEP construction and operations impacts and mitigation is presented below. For each potential impact evaluation, staff describes the potential effect and then analyzes potential impacts by applying threshold criteria for determining significance. If mitigation is warranted, staff provides a summary of the applicant's proposed mitigation and a discussion of the adequacy of the proposed mitigation. In the absence of applicant-proposed mitigation or if mitigation proposed by the applicant is inadequate, staff mitigation measures are recommended.

Water Quality

Construction Storm Water Discharges

Approximately 25.63 acres of land would be disturbed during construction of the proposed project. HBEP construction would require both onsite and offsite laydown and construction parking areas. No new offsite linears are proposed for the project. Approximately 22 acres of construction laydown would be required, with approximately 6 acres at the Huntington Beach Generating Station used for a combination of laydown and construction parking, and 16 acres at the Alamitos Generating Station used for construction laydown. Additional soil disturbance will not be necessary to construct new the new power blocks because they will utilize existing foundations.

If not managed operations or construction activities at the HBEP would have the potential to contaminate storm water runoff and thereby impact local surface waters, specifically the Pacific Ocean. Ocean waters in the vicinity are protected from degradation by the Santa Ana Basin Plan.

The discharge for the site would be subject to regulation based on Beneficial Uses identified in the Santa Ana Basin Plan as the Offshore Zone, "Waters Between Nearshore Zone and Limit of State Waters." The site would likely also be subject to the Santa Ana Basin Plan as the Nearshore Zone identified as "San Gabriel River to Poppy Street in Corona Del Mar." The site would be subject to regulations by the RWQCB to protect the following beneficial uses:

- Industrial Service Supply (IND)
- Navigation (NAV)
- Water Contact Recreation (REC1)
- Non-Contact Water Recreation (REC1)
- Commercial and Sportfishing (COMM)
- Wildlife Habitat (WILD)
- Rare, Threatened, or Endangered Species (RARE)
- Spawning, Reproduction, and Development (SPWN)
- Marine Habitat (MAR)

During construction and operation, the existing stormwater collection system would be used to collect and process stormwater from the site. Stormwater that falls within process equipment containment areas would be collected and discharged to the existing Huntington Beach Generating Station process drain system, which consists of oil/water separation sumps and two retention basins. Stormwater that falls within the plant-wide pavement areas and outside the process equipment containment areas would be routed to the retention basin. A small portion of stormwater may fall outside of the process containment and pavement areas and would either percolate directly into the soil or drain over the surface into the retention basins to assist with the removal of suspended solids. The oil-free stormwater from the process areas and from the pavement areas collected in the retention basins would be discharged to the Pacific Ocean via an existing outfall. The residual oil containing sludge would be collected via vacuum truck and disposed of as hazardous waste. See the **WASTE MANAGEMENT** section for details about disposal locations and quantities.

The project owner would discharge storm water to the same outfall currently utilized by the Huntington Beach Generating Station under the requirements of the Order No. R8-2010-0062, NPDES No. CA0001163.The storm water discharge would join the waste discharge pipeline that extends 1,500 feet into the ocean. The owner would be required to obtain a construction storm water permit during construction and would be covered by project-specific Waste Discharge Requirements issued by the RWQCB for industrial storm water discharges that occur during operation.

The estimated amount of soil disturbance resulting from HBEP construction activities requires that it be covered under the federal General Construction Permit (SWRCB Order No. 2009-0009-DWQ). To ensure compliance with this order, the project should be required to comply with Condition of Certification **SOIL&WATER-1** which requires a construction Storm Water Pollution Prevention Plan (SWPPP) for the HBEP site and laydown areas. The SWPPP would specify BMPs that would prevent all construction pollutants, including erosion products, from contacting storm water, eliminate or reduce non-storm water discharges to waters of the Pacific Ocean, and require inspection and monitoring of BMPs.

At this time it is unclear if the applicant will perform hydrostatic testing, or if so, where it would be discharged. Hydrostatic testing often involves the use of chemicals that have the potential to impact surface waters. If the proposed project performs hydrostatic testing of pipelines or other industrial equipment and chooses to discharge the effluent to the waters of the United States, an additional permit may be required by the RWQCB. Permit Order No. R8-2009-0003, NPDES NO. CAG998001 allows for the discharge of water that pose a *de minimus* threat to surface water quality. If necessary, the applicant shall comply with **SOIL&WATER-2**, which would require the applicant to obtain permit coverage for hydrostatic discharges under Permit Order No. R8-2009-0003, NPDES NO. CAG998001.

Contaminated Groundwater

The Phase I ESA states that "Groundwater underlying the site is known to be impacted by metals, VOCs and 1,4-dioxane. Groundwater is monitored as part of on-going subsurface investigations regarding former Southern California Edison operations at the site including former operation of waste-water retention basins (HBEP 2012a, Phase I ESA). These investigations are currently overseen by the Department of Toxic Substances Control. The presence of groundwater contamination represents a *Recognized Environmental Condition* in connection with the site."

Due to the site's long industrial history, staff is concerned that pumping of contaminated groundwater could result in significant impacts to on and offsite water resources or sensitive environmental receptors. The applicant did not provide a discussion of how contaminated groundwater would be discharged, what volumes may be expected, and how hazardous it could be to the environment. If groundwater dewatering is necessary, the project owner shall apply for coverage for discharges of petroleum contaminated water in the Santa Ana region. Under Order No. R8-2007-0008, NPDES No. CAG918001. Coverage under Order No. R8-20070008, NPDES No. CAG918001 may not be necessary if water quality tests reveal that local groundwater contamination does not exist. Staff proposes Condition of Certification **SOIL&WATER-3**, which would require the applicant to apply for coverage for the discharge of petroleum contaminated water if the applicant engages in groundwater dewatering at the proposed site.

Industrial Wastewater and Storm Water Discharge

As stated above, during operation, the existing storm water collection system would be used to collect and process stormwater from the site. The oil-free stormwater from the process areas and from the pavement areas collected in the retention basins would be discharged to the Pacific Ocean via an existing outfall. The residual oil containing sludge would be collected via vacuum truck and disposed of as hazardous waste (HBEP 2012a). See the **WASTE MANAGEMENT** section of this analysis for more details about waste streams.

The proposed HBEP would discharge its industrial waste water to the Pacific Ocean through the same outfall currently utilized by the Huntington Beach Generating Station under the requirements of the Order No. R8-2010-0062, NPDES No. CA0001163. The discharge rate could range from 29 to 161 gpm. The average annual discharge is expected to be about 11.6 million gallons or about 36 AFY, assuming 6,665 hours of annual operation.

The existing Huntington Beach Generating System discharges approximately 98 billion gallons per year (300,750 AFY) to the Pacific Ocean through once-through cooling units. Therefore the new project would allow for a 300,714 AFY reduction in discharge to the Pacific Ocean. This is a measureable reduction in pollutant loads sent to the ocean from the site.

The proposed project is expected to be issued a new NPDES permit for operations discharge that would replace the existing Order No. R8-2010-0062, NPDES No. CA0001163. The new permit would require the implementation of Best Management Practices (BMPs) for both the project's industrial discharge and the project's operational storm water discharges to the Pacific Ocean. BMPs would likely include pollutant source control, pollutant containment, a monitoring and sampling protocol, and an iterative process for improving initially implemented BMPs based on monitoring and sampling results.

The applicant submitted a draft version of the Waste Discharge Permit application that would be filed with the RWQCB following CEC approval of the project and before the first quarter of 2015 when construction would begin. The applicant also submitted documentation of correspondence with the RWQCB indicating that the applicant's schedule is reasonable (HBEP 2012a, AFC, Appendix 5.15D).

With implementation of BMPs and associated monitoring activities included in Board-issued WDRs, impacts to water quality from operation of the proposed HBEP would be less than significant. Staff proposes **SOIL&WATER-4** which would require the applicant to obtain a permit for project operation from the RWQCB, prior to beginning construction.

Sanitary Wastewater

The city of Huntington Beach provided the applicant a will-serve letter dated April 3, 2012, indicating its intent to provide the site sewerage service. If the proposed HBEP discharges sanitary waste as described above, the impact from its disposal should be less than significant. Staff proposes **SOIL&WATER-5** which would require the applicant to pay sanitary sewer fees ordinarily assessed by the city, in accordance with the city of Huntington Beach Municipal Code Chapter 14.54.

Water Supply

Industrial

HBEP will use about 115 AFY of potable water provided by the city of Huntington Beach for process water. Process water will be used for the generator turbine wash, evaporative cooling blowdown makeup, water treatment, and other purposes. The project will access this water through an existing 8-inch-diameter city of Huntington Beach potable water line serving the existing Huntington Beach Generating Station. The City of Huntington Beach will-serve letter (Appendix 5.15A) indicates there is sufficient supply of potable water to accommodate the HBEP. The potable water that will be provided to the HBEP for use as process water and domestic water is currently allocated for industrial use at the existing Huntington Beach Generating Station (HBEP 2012a).

Based on water volumes from 2004 through 2011, the existing Huntington Beach Generating Station has historically used approximately 290 AFY while operating at only 15 percent of its maximum capacity. The existing Huntington Beach Generating Station therefore uses more portable water than is proposed for the HBEP, which would result in a net reduction of potable water use equal to 175 AFY and a net beneficial impact on local water supplies, despite a large increase in capacity factor and energy production (megawatt-hours).

Construction

Construction would require potable water for dust suppression. Average water use during construction would be about 18,000 gallons per day (gpd) and around 24,000 gpd during hydrostatic testing and commissioning. Commissioning is expected to take about 60 days. Average annual construction water use is not expected to exceed 22 AFY.

The volume of water required for construction would be offset by the operational water savings during the life of the project. The water necessary for construction would allow the proposed project to proceed and result in a net reduction in local water use.

Domestic

The HBEP would employ a staff of 33 in three rotating shifts. As a result, a minimal amount of potable water will be used for sanitary use, drinking, eye wash, and safety showers, as well as fire protection water. Average use is expected to be less than 1 gpm, or about 1.2 AFY.

Staff proposes **SOIL&WATER-5** which would require the applicant to pay for water supply connection fees ordinarily assessed in accordance with the Huntington Beach Municipal Code Chapter 14.54.

To ensure that project water use is within the projected volumes analyzed herein, staff proposes Conditions of Certification **SOIL&WATER-6** and **-7**, which would require the applicant to report facility water use in compliance reports. If **SOIL&WATER-6** and **-7** are implemented as proposed, impacts to local water supplies would be less than significant.

Flooding

Staff reviewed the Federal Emergency Management Agency (FEMA) Huntington Beach (06059C0263J) Flood Insurance Rate Map (FIRM). The proposed project is located in Zone X and protected from the 1 percent annual chance of flooding (100-year flood) by an accredited levee along the Huntington Beach Channel (FEMA, 2012). Accredited levee designations are issued by FEMA for use on Flood Insurance Rate Maps (FIRM). An accredited levee can be designated by FEMA if the owner of the levee passes a certification process and provides an adequate operations and maintenance program.

The Orange County Flood Control Maintenance Office (Maintenance Office) is responsible for the upkeep of the local levees that provide the necessary flood protection. Staff contacted the Maintenance Office (TN # 69272) in an attempt to understand active maintenance on the Huntington Channel. Following the meeting, staff understands that the recent FEMA maps incorporate current site and levee elevations. The proposed project site would not need to be raised to maintain Zone X status. Orange County is not aware of any other site improvements done to modify its flood control functions. See **Soil & Water Figure 2** for a detail of the local flood zones.

Flood hazard maps were recently revised for the county, in December 2009, which should provide some confidence about the proposed project's protection from inundation in the near future. FEMA flood maps are however subject to revision and it should be noted that potential relative rise in sea-level would require augmentation of the Huntington Channel to maintain the current level of protection.

Projected sea-level rise has the potential to reduce the effectiveness of local flood control measures by increasing the base level (sea-level) of the Huntington Beach Channel. The local protection from inundation is projected to be reduced up to 30 centimeters (1.0 feet) by 2030 and 61 centimeters (2.0 feet) by 2050 (relative to 2000 levels) (CEC, 2009; NAS, 2012). The site geotechnical report (Ninyo & Moore, 2011) acknowledges future sea-level rise. An Energy Commission study (CEC, 2009) also shows the project site may have reduced flood protection and inundation potential in the future. A significant rise in local sea water levels would also raise groundwater levels, decrease relative flood protection currently afforded by levees along the Huntington Beach Channel, and raise the fluvial base level thereby potentially increasing the rate and extent of flooding.

The proposed project would have final grades between 12 to 16 feet above sea level. The Huntington Beach Channel and surrounding communities are at about eight feet above sea-level. These elevations suggest that the site has four to eight feet of elevation separation from the surrounding area. The current projections of sea-level rise could reduce the separation between the site and the flood channel elevation by up to 2.0 feet by 2050. However, if the minimum separation between the site and the surrounding floodplain is reduced from four feet to two foot there would still be some level of flood protection.

Storm Surge and Wave Run-up

Storm surge is usually defined by increased ocean water levels that occur during storms. Much like precipitation events and rainfall runoff events, storm surge events can be assigned recurrence intervals, e.g. 10-year, 100-year, etc. Storms may result in ocean water level increases that create increased threats of local flooding for shoreline property.

Tebaldi et al., 2012, reported on the history and expected trends of storms at the Los Angeles Harbor (gauge 9410660). The 100-year return level storms in this area result in about 3 feet of local sea-level rise. Projections for local sea-level rise do not indicate that local sea-level rise has any relative influence on the magnitude of the 100-year storm surge. Therefore the 100-year storm surge in 2050 is expected to be the same as today, about one meter.

This estimate of storm surge coupled with potential relative sea-level rise could result in the project site being classified as with the 100-year floodplain (FEMA Zone AE). As was concluded in the "Flooding" section above, a worst-case prediction shows that the site could have as little as 2.0 feet of separation from the adjacent channel and surrounding floodplain. Ocean storm surges such as the 100-year return level could eliminate the site's separation from the floodplain.

The site is not currently classified as being within the 100-year floodplain. Based on estimates stated above, the site classification could change by the year 2050. The site is vulnerable to flooding from extreme weather events and its protection may decrease in the future. If this is the case, and current levee protection is not augmented, the FEMA zone designation may change from Zone X (above the 100-year floodplain) to Zone AE (below the 100-year floodplain).

Tsunami and Seiche

The proposed site is within the zone identified by California Emergency Management Agency (CEMA) as a tsunami inundation zone (**Soil & Water Figure 3**). The proposed site is within a six square mile area that could be impacted by a tsunami. However, the site is above the expected inundation elevation and therefore tsunami events are not expected to be a threat, as described in the **Geology & Paleontology** section. A more detailed discussion of hazards posed by tsunami and seiche is included in the **Geology & Paleontology** section of this document.

CUMULATIVE IMPACTS AND MITIGATION

A project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of reasonably foreseeable future projects (California Code of Regulations, Title 14, section 15130). The construction and operation activities of the various projects could potentially overlap and result in cumulative impacts to the same resource(s).

Potable Water Supply

The proposed project would create a net benefit for local water supplies, when considered cumulatively with any other project. The proposed project would result in a net reduction of 175 AFY. When considered cumulatively this 175 AFY benefit could be reduced by other new users, but would still be considered a net benefit to the local water supply system.

Water Quality

When considered cumulatively with other proposed projects, the HBEP would result in a net cumulative benefit in waste discharges to the Pacific Ocean. Industrial discharge flows would decrease because of decreased plant water use. Permitted average discharge flows are 0.2 mgd, whereas the HBEP discharges would average 0.04 mgd, which would be a 0.16 mgd reduction in water volume and a similarly proportional decrease in pollutant loading. When considered cumulatively this 0.16 mgd benefit could be reduced by other new users, but would still be considered a net benefit by reducing pollutant loads to the Pacific Ocean. The proposed project would also allow for the elimination of the existing once-through cooling discharge, permitted at 507 mgd.

COMPLIANCE WITH LORS

The Energy Commission’s power plant certification process requires staff to review each of the proposed project’s elements for compliance with LORS and state policies. Staff has reviewed the project elements and concludes that the proposed HBEP project would comply with all applicable LORS addressing protection of water resources, storm water management, and erosion control, as well as drinking water, use of freshwater, and wastewater discharge requirements, as long as staff’s proposed conditions of certification are adopted and implemented. Summary discussions of project compliance with significant LORS and policies are provided below.

STORMWATER

Clean Water Act

Staff has determined that HBEP would satisfy the requirements of the National Pollutant Discharge Elimination System (NPDES) permit with the adoption of Conditions of Certification **SOIL&WATER-1** and **SOIL&WATER-2**. These conditions would ensure that the appropriate NPDES permits are obtained by the applicant.

PORTER-COLOGNE WATER QUALITY CONTROL ACT

Staff has concluded that HBEP would satisfy the applicable requirements of the Porter-Cologne Water Quality Control Act and adequately protect the beneficial uses of waters of the state through implementation of federal, state, and local requirements for management of storm water discharges and pollution prevention, compliance with local grading and erosion control requirements, and compliance with local onsite wastewater system requirements.

SWRCB Policy 75-58 and Energy Commission—Integrated Energy Policy Report (IEPR)-Power Plant Water Use and Wastewater Discharge Policy

The California Energy Commission, under legislative mandate specified in the *2003 Integrated Energy Policy Report*, (policy) and State Water Resources Control Board Resolution 75-58, will approve the use of fresh water for cooling purposes by power plants it licenses only where alternative water supply sources and alternative cooling technologies are shown to be environmentally undesirable or economically unsound. The IEPR policy also requires the use of zero-liquid discharge (ZLD) technologies unless such technologies are shown to be “environmentally undesirable” or “economically unsound.”

Alternative sources were evaluated for their potential to supply the project’s process water needs. Two nearby wastewater treatment plants were considered in the applicant’s analysis for their potential to supply recycled water to HBEP. Staff agrees that these alternatives are not superior because the project’s proposed water supply would significantly reduce water use at the existing facility and be a net benefit relative to the baseline. Other alternatives would require substantial construction in densely populated urban areas.

Additionally, HBEP proposes to use an alternative cooling technology to reduce the amount of water required for plant operation. The air-cooled condenser would allow for the elimination of wet cooling and significantly reduce the plant's water needs, by about 175 AFY compared to the baseline. Staff concurs with the applicant that the use of an air cooled condenser is an economically sound practice that provides environmental benefits from significantly reduced water use. Staff also notes that although the project would include limited freshwater use for inlet air cooling, it would also include use of dry low NOx combustors which would limit water use.

In addition, the Energy Commission's water policy also seeks to protect water resources from power plant wastewater discharges. To that end, the water policy specifies that the Energy Commission will require zero liquid discharge technologies (for management of power plant wastewaters) unless such technologies are shown to be 'environmentally undesirable' or 'economically unsound.' The HBEP would not utilize ZLD technologies, because the project would allow for a substantial reduction (0.16 mgd) in wastewater volume to the Pacific Ocean. Staff notes that the applicant proposes a number of water reuse and wastewater reduction systems which would include the following:

- The reject water stream from the reverse osmosis system would be discharged to a holding tank for reuse onsite such as equipment wash down, fire water loop, and closed-loop cooling.
- Blowdown (condensate removed from the HRSGs to reduce water contaminants) would be discharged to an atmospheric flash tank, where the flash steam would be vented to the atmosphere and the condensate would be cooled prior to transfer to a holding tank for reuse.
- Blowdown from the combustion turbine evaporative coolers would be discharged to the plant process drain system and stored for reuse onsite.
- Service water would be used for makeup to the combustion turbine evaporative coolers, equipment washdown, and other miscellaneous plant uses.

Therefore, staff finds that the wastewater management would be in compliance with the intent of the water policy because it eliminates the significant portion of process wastewater discharge from the facility.

LOCAL LORS

Staff concludes that with the implementation of Conditions of Certification **SOIL&WATER- 5** HBEP would satisfy the applicable requirements of all local LORS by paying necessary local connection fees to the city of Huntington Beach for water supply and sanitary sewer disposal services.

NOTEWORTHY PUBLIC BENEFITS

- The proposed project would reduce the amount of water used relative to baseline conditions. The reduction in water use would be about 175 AFY, which would result in additional supplies for other beneficial uses.

- The proposed project would result in a 0.16 MGD reduction in industrial waste water volume to the Pacific Ocean and a similarly proportional decrease in pollutant loading
- The proposed project would result in the elimination of once-through cooling from the existing Huntington Beach Generating System. SWRCB's Resolution No. 2010-0020 and adoption of a Policy for the Use of Coastal and Estuarine Waters for Power Plant Cooling (OTC Plan), requires all coastal power plants that utilize OTC to meet new performance requirements (Best Technology Available [BTA]) through a reduction in intake volume and velocity. The proposed project helps achieve the goals of the OTC Plan through dry-cooling and reduced discharge.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

No agency or public comments were received regarding Soil and Water Resources.

CONCLUSIONS

- The proposed project would reduce the amount of water used relative to baseline conditions (Huntington Beach Generating System). The reduction in water use would be about 175 AFY, which would result in additional supplies for other beneficial uses.
- The proposed project would result in a 0.16 million gallon per day (mgd) reduction in industrial waste water volume to the Pacific Ocean and a similarly proportional decrease in pollutant loading
- The proposed project would result in the elimination of once through cooling from the existing Huntington Beach Generating System. Once-through cooling water from the Pacific Ocean would be replaced by City of Huntington Beach municipal supply water.
- Staff proposes Condition of Certification **SOIL&WATER-1,** which would require the proposed project to comply with the Clean Water Act and obtain discharge permits for construction through the State Water Resources Control Board. This condition would ensure that the impacts to waters of the United States from construction would be less than significant.
- Staff proposes Condition of Certification **SOIL&WATER-2**, which would require the proposed project to comply with Permit Order No. R8-2009-0003, NPDES NO. CAG998001, if hydrostatic waters are discharged to waters of the US. This condition would ensure that the impacts to waters of the United States from hydrostatic testing would be less than significant.
- Staff proposes Condition of Certification **SOIL&WATER-3,** which would require the proposed project to comply with the Clean Water Act and obtain discharge permits for operation through the State Water Resources Control Board. This condition would ensure that the impacts to waters of the United States from construction would be less than significant.

- Groundwater at the site is relatively shallow and potentially contaminated by petroleum products and by-products. Trench and foundation excavations will likely encounter shallow groundwater and dewatering would be required for stabilization. If the applicant engages in dewatering, staff would require that the applicant comply with Condition of Certification **SOIL&WATER-4**, which would require the applicant to apply for coverage under a permit that would allow for the discharge of petroleum-contaminated water.
- Staff proposes Condition of Certification **SOIL&WATER-5**, which would require the proposed project to comply with the city of Huntington Beach code, Title 14 Water and Sewers. This condition would ensure that connections to the city's water and sewer system are completed appropriately and that annual fees are paid to the city.
- Staff proposes Condition of Certification **SOIL&WATER-6**, which would limit the proposed project's water use to 115 acre-feet per year and require regular water use reporting to the Commission.
- Staff proposes Condition of Certification **SOIL&WATER-7**, which would require the applicant to install water meters.
- The proposed project is located in Zone X and protected from the 1% annual chance of flooding (100-year flood) by an accredited levee along the Huntington Beach Channel.
- Recent Energy Commission studies show the Huntington Beach vicinity is at increased risk of flooding due to relative sea level rise. However the proposed site would be sufficiently above sea level to ensure power plant reliability. Even with high-end estimates of relative sea-level rise of 61 centimeters (2.0 feet) by 2050 (relative to 2000) (NAS, 2012), the site would still be about 2.0 feet above the current (2012) 100-year floodplain (FEMA, 2012).
- Storm surge events in the Pacific Ocean could cause ocean water level increases of up to three feet during a 100-year return level event. Coupled with projected relative sea-level rise estimates, this level of storm surge could reduce the proposed site's flood protection and perhaps contribute to a change status from FEMA Zone X (above the 100-year floodplain) status to Zone AE (within 100-year floodplain).
- The project will include use of air cooled condensers for cooling of the steam cycle. This technology significantly reduces the potential for use of other water supplies and is encouraged in accordance with the Energy Commission's water policy. Development of alternative water supplies for remaining industrial uses does not appear to be feasible. In addition, the project would use a number of systems to reuse wastewater and reduce wastewater volume. Staff believes the project water use is consistent with Energy Commission water policy.
- The proposed project helps the entire Huntington Beach Power Station move away from once-through-cooling (OTC). SWRCB's Resolution No. 2010-0020 and adoption of a Policy for the Use of Coastal and Estuarine Waters for Power Plant Cooling (OTC Plan), requires all coastal power plants that utilize OTC to meet new performance requirements (Best Technology Available [BTA]) through a reduction in intake volume and velocity. The proposed project helps achieve the goals of the OTC Plan through dry-cooling and reduced discharge.

PROPOSED CONDITIONS OF CERTIFICATION

NPDES CONSTRUCTION PERMIT REQUIREMENTS

SOIL&WATER-1: The project owner shall manage stormwater pollution from HBEP construction activities by fulfilling the requirements contained in State Water Resources Control Board's *National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWG, NPDES No. CAS000002*) and all subsequent revisions and amendments. The project owner shall develop and implement a construction Storm Water Pollution Prevention Plan (SWPPP) for the construction of the HBEP project.

<u>Verification</u>: Thirty (30) days prior to site mobilization of HBEP construction activities, the project owner shall submit the construction SWPPP to the CBO and CPM for review and the SWRCB for review and comment. A copy of the approved construction SWPPP shall be kept accessible onsite at all times. Within 10 days of its mailing or receipt, the project owner shall submit to the CPM any correspondence between the project owner and the Santa Ana Regional Water Quality Control Board about the general NPDES permit for discharge of stormwater associated with construction and land disturbance activities. This information shall include a copy of the notice of intent and the notice of termination submitted by the project owner to the SWRCB.

HYDROSTATIC WATERDISCHARGE PERMIT REQUIREMENTS

SOIL&WATER-2: Prior to initiation of hydrostatic testing water discharge to surface waters, the project owner shall obtain a National Pollutant Discharge Elimination System permit for discharge to the Pacific Ocean. The project owner shall comply with the requirements of the Permit Order No. R8-2009-0003, NPDES NO. CAG998001 for hydrostatic testing water discharge. The project owner shall provide a copy of all permit documentation sent to the Santa Ana Regional Water Quality Control Board or State Water Quality Control Board to the CPM and notify the CPM in writing of any reported non-compliance.

<u>Verification</u>: Prior to construction mobilization, the project owner shall submit to the CPM documentation that all necessary NPDES permits were obtained from the Santa Ana Regional Water Quality Control Board or State Water Quality Control Board. Thirty (30) days prior to HBEP operation, the project owner shall submit to the CPM a copy of the relevant plans and permits received. The project owner shall submit to the CPM all copies of any relevant correspondence between the project owner and the Board regarding NPDES permits in the annual compliance report.

GROUNDWATER DISCHARGE PERMIT REQUIREMENTS

SOIL&WATER-3: Prior to initiation of groundwater dewatering discharge, the project owner shall apply for coverage under Order No. R8-2007-0008, NPDES No. CAG918001 for the discharge of general groundwater cleanup wastes. Coverage under Order No. R8-20070008, NPDES No. CAG918001 may not be necessary if water quality tests reveal that local groundwater contamination does not exist. The project owner shall provide a copy of all permit documentation sent to the Santa Ana Regional Water Quality Control Board or State Water Quality Control Board to the CPM and notify the CPM in writing of any reported non-compliance.

Verification: Prior to construction mobilization, the project owner shall submit to the CPM documentation that all necessary NPDES permits were obtained from the Santa Ana Regional Water Quality Control Board or State Water Quality Control Board. Thirty (30) days prior to HBEP operation, the project owner shall submit to the CPM a copy of the relevant plans and permits received. The project owner shall submit to the CPM all copies of any relevant correspondence between the project owner and the Board regarding NPDES permits in the annual compliance report.

NPDES INDUSTRIAL PERMIT REQUIREMENTS

SOIL&WATER-4: Prior to mobilization for construction, the project owner shall obtain a National Pollutant Discharge Elimination System permit for industrial waste and stormwater discharge to the Pacific Ocean. The project owner shall discharge to the same outfall currently utilized by the Huntington Beach Generating Station under the requirements of Order No. R8-2010-0062, NPDES No. CA0001163. The project owner shall provide a copy of all permit documentation sent to the Santa Ana or State Water Board to the CPM and notify the CPM in writing of any reported non-compliance.

Verification: Prior to construction mobilization, the project owner shall submit to the CPM documentation that all necessary NPDES permits were obtained from the Santa Ana or State Water Board. Thirty (30) days prior to HBEP operation, the project owner shall submit to the CPM a copy of the Industrial SWPPP. The project owner shall submit to the CPM all copies of any relevant correspondence between the project owner and the Board regarding NPDES permits in the annual compliance report.

WATER AND SEWER CONNECTIONS

SOIL&WATER-5: The project owner shall pay the city of Huntington Beach all fees normally associated with industrial connections to the city's sanitary sewer or water supply system as defined in the city's code, Title 14 Water and Sewers.

Verification: Prior to the use of the city's water or sewer system the owner shall provide the CPM documentation indicating that the city has accepted the projects connections to the water and sewer systems. Fees paid to the city shall be reported in the Annual Compliance Report for the life of the project.

WATER USE AND REPORTING

SOIL&WATER-6: Water supply for project operation and construction shall be potable water supplied from the city of Huntington Beach. Water use for operation shall not exceed 115 AFY; water use for construction shall not exceed 22 AFY. A monthly summary of water use shall be submitted to the CPM.

Verification: The project owner shall record HBEP operation water use on a daily basis and shall notify the CPM within 14 days upon forecast to exceed the maximum annual use as described above. Prior to exceeding the maximum use, the owner shall provide a plan to modify operations.

The project owner shall record HBEP construction water use on a daily basis and shall notify the CPM within 14 days upon forecast to exceed the maximum annual use of 22 AFY of potable water. Prior to exceeding the maximum use, the owner shall provide a plan to modify construction practices or offset excess water use.

The project owner shall submit a water use summary report to the CPM monthly during construction and annually during operations for the life of the project. The annual report shall include calculated monthly range, monthly average, daily maximum within each month and annual use by the project in both gallons per minute and acre-feet. After the first year and for subsequent years, this information shall also include the yearly range and yearly average potable water used by the project.

WATER METERING

SOIL&WATER-7: Prior to the use of a water source during commercial operation, the project owner shall install and maintain metering devices as part of the water supply and distribution system to monitor and record in gallons per day the total volume(s) of water supplied to the HBEP from the water source. Those metering devices shall be operational for the life of the project and must be able to record the volume from each source separately.

Verification: At least thirty (30) days prior to use of any water source for HBEP operation, the project owner shall submit to the CPM evidence that metering devices have been installed and are operational. The project owner shall provide a report on the servicing, testing, and calibration of the metering devices in the annual compliance report.

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SOIL AND WATER RESOURCES - FIGURE 1
Huntington Beach Energy Project- Site Location Map

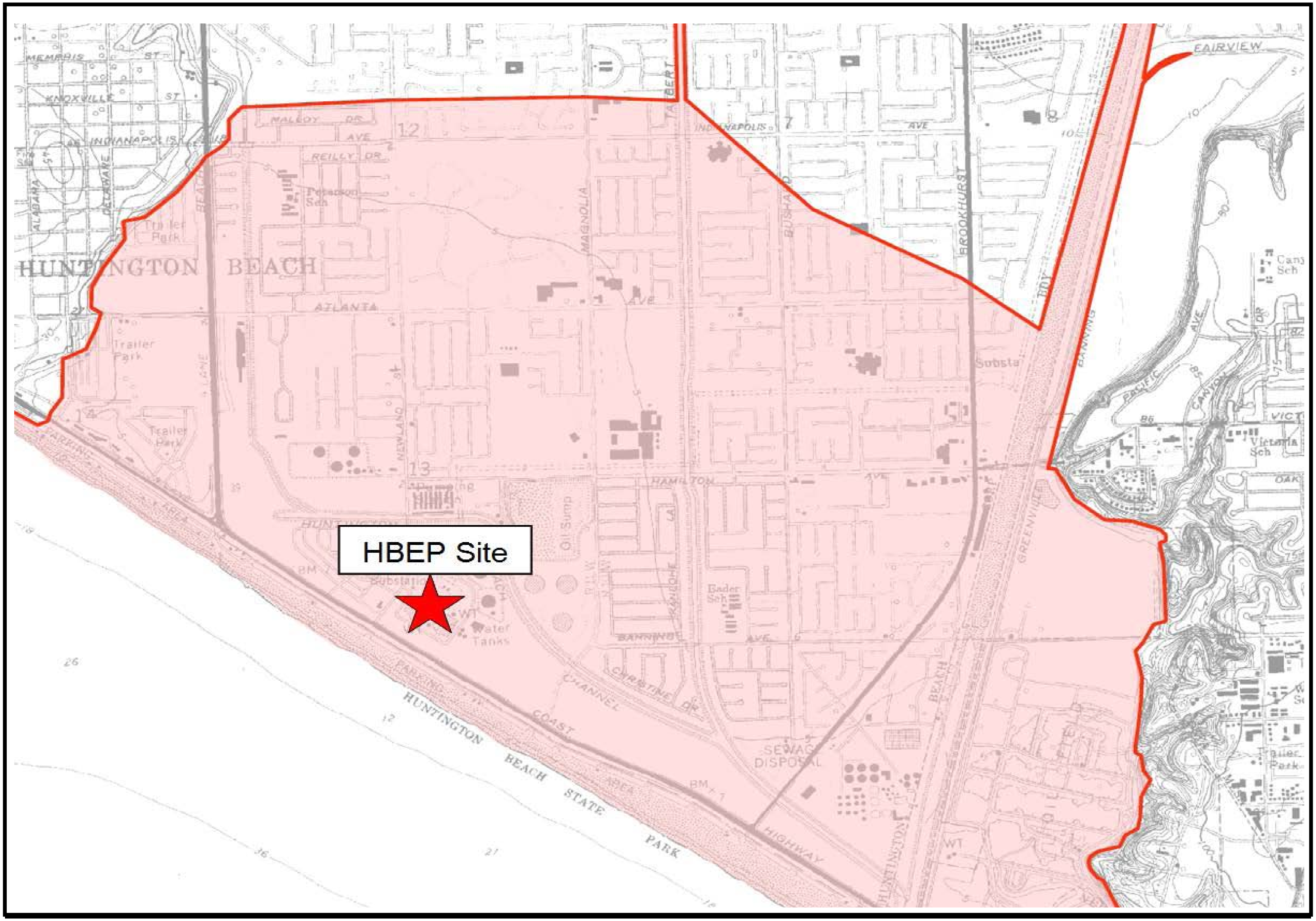
CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: ESRI, 2013. This is public domain mapping imagery. We made this ourselves.

SOIL AND WATER RESOURCES - FIGURE 2
Huntington Beach Energy Project- Huntington Beach Flood Zones (FEMA, 2009)

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: FEMA, 2012. Flood Insurance Rate Map 6059C0263J.

SOIL AND WATER RESOURCES - FIGURE 3

Huntington Beach Energy Project - Huntington Beach Tsunami Indundation Zone (CEMA, 2009)



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: CEMA, 2009. California Emergency Management website, Orange County tsunami inundation map. I made this figure also.

TRAFFIC AND TRANSPORTATION

Jonathan Fong

SUMMARY OF CONCLUSIONS

Energy Commission staff has analyzed the information provided in the Application for Certification (AFC) and acquired from other sources to determine the potential for the Huntington Beach Energy Project (HBEP) to have significant adverse traffic and transportation-related impacts. Staff has also assessed the potential for mitigation proposed by the applicant and conditions of certification developed by staff to reduce any potential impacts to a less than significant level, as well as the feasibility and enforceability of those proposed mitigations and recommended conditions.

Staff concludes that upon implementation of proposed Conditions of Certification **TRANS-1** through **TRANS-7** project related impacts would be reduced to less than significant level and the project would comply with all applicable laws, ordinances, regulations, and standards pertaining to traffic and transportation.

INTRODUCTION

In compliance with the California Environmental Quality Act (CEQA) and Energy Commission requirements, this analysis identifies the HBEP's potential impacts to the surrounding transportation systems and proposed mitigation measures (conditions of certification) that would avoid or lessen these impacts. It also addresses the project's consistency with applicable federal, state, and local transportation-related laws, ordinances, regulations, and standards (LORS).

APPLICANT-PROPOSED IMPROVEMENTS AND TRAFFIC MEASURES

The applicant has proposed a Construction and Demolition Transportation Management Plan (TMP) to ensure that construction and operation of HBEP would result in less than significant traffic impacts (HBEP 2012a). The TMP would include:

- Potential rerouting and rescheduling construction traffic along Highway 1 to reduce traffic at affected intersections.
- Monitoring of Beach Boulevard/ Highway 1 and Brookhurst Street/ Highway 1 intersections,
- Timing of construction deliveries and implementation of traffic control measures (flag persons, temporary lane closures, and signage).
- Restoration of damaged roadways.
- Construction timing and mitigation plan coordinated with affected local agencies.

The applicant's proposed mitigation measures in the TMP are similar to staff's proposed Conditions of Certification **TRANS-1** through **TRANS-3** which are discussed in greater detail in the "Direct/Indirect Impacts and Mitigation" subsection below.

SETTING

The proposed HBEP site is located within the incorporated city of Huntington Beach at the northeast corner of the intersection of Pacific Coast Highway (PCH, State Highway 1) and Newland Street. The site is currently developed with an operating electrical generation facility.

The HBEP site is located in the coastal zone of Huntington Beach within western Orange County. The area is largely built out with a range of residential, commercial and industrial land uses. See the **Land Use** section for a discussion of the surrounding land uses. The city of Huntington Beach roadway system is a predominantly grid network with roadways connecting north to I-405 (Huntington Beach Freeway) and south to PCH. See **Traffic and Transportation Figure 1** for a regional map of roadways and surrounding cities.

The applicant has identified off-site equipment laydown and construction workforce parking areas that would be used during project construction. Equipment laydown would occur on a 16-acre undeveloped portion of the existing AES Alamitos Generating Station (AGS). AGS is approximately 12 miles from the project site located in the southeast portion of the city of Long Beach along the San Gabriel River. The AGS site is situated on the northeast corner of the intersection of North Studebaker Road and E 2nd Street. North Studebaker Road provides access from the Naples area of Long Beach to State Route 22 (Garden Grove Freeway). E 2nd Street provides an east/ west connection from Long Beach to the Long Beach Freeway (I-405). The portion of AGS that would be used for construction equipment laydown is bordered by marsh lands and the San Gabriel River.

Construction workforce parking would be provided in four off-site and one-site areas. The proposed parking areas are identified in **Traffic and Transportation Figure 4.** Two parking areas would be located in the city of Huntington Beach parking lots south of the intersection of Beach Boulevard and PCH. This area directly abuts the beach to the south with resort hotels to the north. One parking area would be located on an unpaved dirt lot directly west of the project site along Newland Street which abuts an existing mobile home park. A portion of the existing but non-operational Plain America tank farm located directly east of the project site would also be used for construction parking. The applicant has identified an area on-site that would be used for limited construction work

Construction of the HBEP would require the delivery of large components by way of heavy/ oversized trucks from the Port of Long Beach to the project site. The use of heavy/oversized trucks would be subject to the permitting requirements of the local cities and counties listed in the LORS table in **Traffic and Transportation Table 1.** The roadways that would be affected by the proposed route are listed in **Traffic and Transportation Table 2.**

Refer to the **Project Description** section for a detailed discussion of the existing power generating facilities on site, project description and a description of the demolition and construction schedule.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Traffic and Transportation Table 1 provides a general description of adopted federal, state, and local LORS pertaining to traffic and transportation that apply to this project.

Traffic and Transportation Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
Federal	
Title 49, Code of Federal Regulations, Parts 171-177	Requires proper handling and storage of hazardous materials during transportation.
Title 14, Code of Federal Regulations, Section 77.13 (2)(i)	This regulation requires notification of the Federal Aviation Administration (FAA) of construction structures with a height greater than 200 feet from grade or greater than an imaginary surface extending outward and upward at a slope of 100 to 1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of an airport with at least one runway more than 3,200 feet in length.
State	
California Vehicle Code, Sections 13369, 15275, 15278	Requires licensing of drivers and the classification of license for the operation of particular types of vehicles. A commercial driver's license is required to operate commercial vehicles. An endorsement issued by the Department of Motor Vehicles (DMV) is required to drive any commercial vehicle identified in Section 15278.
California Vehicle Code, Sections 31303-31309	Requires transportation of hazardous materials to be on the state or interstate highway that offers the shortest overall transit time possible.
California Vehicle Code, Sections 31600-31620	Regulates the transportation of explosive materials.
California Vehicle Code, Sections 32100-32109	Requires shippers of inhalation hazards in bulk packaging to comply with rigorous equipment standards, inspection requirements, and route restrictions.
California Vehicle Code, Sections 34000-34100	Establishes special requirements for vehicles having a cargo tank and for hazardous waste transport vehicles and containers, as defined in Section 25167.4 of the Health and Safety Code.
California Vehicle Code, Section 35550-35551	Provides weight guidelines and restrictions vehicles traveling on freeways and highways.
California Vehicle Code, Section 35780	Requires a single-trip transportation permit to transport oversized or excessive loads over state highways.
California Streets and Highways Code, Sections 660, 670, 672, 1450, 1460, 1470, 1480 et seq., 1850-1852	Requires encroachment permits for projects involving excavation in state and county highways and city streets.
California Health and Safety Code, Section 25160	Addresses the safe transport of hazardous materials.
California Department of Transportation CA Manual of Uniform Traffic Control Devices (MUTCD) Part 6 (Traffic Manual)	Provides traffic control guidance and standards for continuity of function (movement of traffic, pedestrians, bicyclists, transit operations), and access to property/utilities when the normal function of a roadway is suspended.
Local	
City of Huntington Beach General Plan, Infrastructure and Community Services Chapter III, Circulation Element	The Circulation Element is a required chapter of the General Plan which evaluates the transportation needs of the city and provides a transportation plan to meet those needs.

Applicable Law	Description
2011 Orange County Congestion Management Plan (CMP)	A required transportation planning document for urbanized areas with populations of 50,000. The CMP goals are to support regional mobility and air quality objectives by reducing traffic congestion.
City of Seal Beach Municipal Code	Requires an oversize vehicle permit for vehicles, mobile equipment or loads which exceed the requirements of the Vehicle Code
City of Long Beach Municipal Code	
Orange County Code	
Los Angeles County Code	
City of Huntington Beach Municipal Code	

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHODS AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

Significance criteria used in this document for evaluating environmental impacts are based on the CEQA Guidelines, the CEQA Environmental Checklist for Transportation/Traffic, and applicable LORS used by other governmental agencies. Specifically, staff analyzed whether the proposed project would result in the following:

1. Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections);
2. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;
3. Conflict with an applicable congestion management program, including, but not limited to, level of service standards (LOS) and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways;
4. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
5. Result in inadequate emergency access;
6. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities;
7. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risk;

8. Produce a thermal plume in an area where flight paths are expected to occur below 1,000 feet from the ground[1]; or
9. Have individual environmental effects which, when considered with other impacts from the same project or in conjunction with impacts from other closely related past, present, and reasonably foreseeable future projects, are considerable, compound, or increase other environmental impacts.

CRITICAL ROADS AND FREEWAYS

The city of Huntington Beach Circulation Element classifies roadways in the city limits based on the average daily trips (ADT). The following describes the local and regional roadways that would be used for construction and operational traffic accessing the proposed project site. The regional roadways are shown in **Traffic and Transportation Figure 1.** The local roadways within the Huntington Beach city limits are shown in **Traffic and Transportation Figure 2**.

Existing Regional and Local Transportation Facilities

Pacific Coast Highway (PCH, State Highway 1): PCH is under the California Department of Transportation (Caltrans) jurisdiction and subject to state design standards. The Orange County Transportation Authority (OCTA) designates PCH as a Smart Street Arterial. Smart arterials are six to eight lane roadways of enhanced capacity due to the implementation of signal synchronization, bus turnouts and other traffic improving techniques. Smart streets carrying capacities can range from 60,000 to 79,000 vehicles per day. PCH provides inter-regional access connecting the city of Huntington Beach coastal communities.

Beach Boulevard (State Route 39): Beach Boulevard is the other Smart Street Arterial located within the city. Beach Boulevard is a six to eight lane arterial and is the major north south roadway in the city connecting PCH to I-405 (Huntington Beach Freeway).

Brookhurst Street: Brookhurst is a north/south Major Arterial which connects PCH through the city of Fountain Valley. Brookhurst is a six lane divided roadway with a carrying capacity of up to 50,000 vehicles per day.

Magnolia Street: Magnolia is a north/south Primary Arterial which is a four lane divided roadway connecting PCH north through the city of Huntington Beach to the city of Fountain Valley. Maximum daily traffic volume is 35,000 vehicles per day. Magnolia Street is the first Primary Arterial south of the project site directly adjacent to the Magnolia Marsh.

Newland Street: Newland Street is a Secondary Arterial which borders the project site to the north. Newland runs north/south from PCH to I-405 and as a secondary arterial has a daily maximum carrying capacity of 25,000 vehicles.

[1] The FAA recommends that pilots avoid overflight of plume-generating industrial sites below 1,000 feet AGL (FAA 2006).

Heavy/ Oversized Truck Route

The HBEP would include the delivery of large components of the facility via heavy/ oversized deliveries. The deliveries would come from either the Port of Long Beach or via rail to an existing rail line on Anaheim Street, which are both located within the city of Long Beach. A map of the planned truck route is shown in **Traffic and Transportation Figure 3.** The deliveries would originate from the port or the rail line and would travel to the off-site laydown area at AES Alamitos. The applicant anticipates approximately 112 oversize trips would be required for the project. Three trips would be planned on any given night occurring between the hours of 10 p.m. and 4 a.m (HBEP 2012b).

The oversized vehicles are expected to be a maximum of 15’6” tall, 20 feet wide and 135 feet long. Due to the size of the transport vehicles, the applicant would be required to use pilot vehicles escorted by California Highway Patrol (CHP) personnel. In accordance with permit requirements, the applicant would be responsible for rolling road closures, temporary no parking and establishing alternative traffic routes along the truck route.

Prior to any transport of heavy/ oversized equipment, the applicant would employ a preconstruction crew to make necessary temporary improvements along the route. These may include the temporary relocation of low hanging power and utility lines, street signals, and median landscaping. All preconstruction work would be done in accordance with local jurisdiction permitting requirements and would be returned to preconstruction condition following transport.

The delivery of components from the Port of Long Beach and AES Alamitos to the HBEP would occur under “just in time delivery.” Large components would be lifted from the truck trailer and put directly into place, thereby minimizing temporary storage of equipment at HBEP (HBEP2013a). A list of the potentially affected roadways for the heavy/ oversized truck route is listed in **Traffic and Transportation Table 2** listed below. Staff contacted the affected local agencies to determine permitting requirements for oversized truck deliveries and recommended routes. Due to the presence of existing military, aeronautical and other large scale industrial activities in the region, local agencies have experience routinely permitting oversize deliveries of comparable size as those proposed as part of HBEP. The proposed route would follow adopted truck routes in the region and no significant impacts to existing levels of service (LOS) are anticipated.

Staff is recommending implementation of proposed Condition of Certification **TRANS-3** which would require the applicant to obtain all necessary permits from affected jurisdictions for the transportation of heavy/ oversized equipment associated with the HBEP project.

Traffic and Transportation Table 2
Heavy/ Oversized Truck Route, Affected Roadways

County	City	Roadway
Los Angeles	Long Beach	Harbor Plaza*
		Pico Avenue*
		10th Street*
		9th Street*
		Santa Fe Avenue*
		W. Anaheim Street
		Magnolia Avenue
		Ocean Boulevard
		Alamitos Avenue
		Anaheim Street
		Pacific Coast Highway
		2nd Street
		N. Studebaker Road
Orange	City of Seal Beach	Pacific Coast Highway
	City of Huntington Beach	Pacific Coast Highway
		Goldenwest Street
		Garfield Avenue
		Beach Blvd
		Newland Street

*Port of Long Beach Delivery Option

Level of Service (LOS)

To quantify the existing baseline traffic conditions, state highways, roadways, and intersections in the study area were analyzed in the AFC to determine their operating conditions. Based on the traffic volumes, the turning movement counts, and the existing number of lanes at each intersection, the volume/capacity (V/C) ratios and levels of service (LOS) have been determined for each intersection.

LOS is a qualitative measure describing operational conditions within a traffic stream. It is used to describe and quantify the congestion level on a particular roadway or intersection and generally describes these conditions in terms of such factors as speed or vehicle movement. **Traffic and Transportation Table 3** summarizes roadway LOS for associated V/C ratios.

Traffic and Transportation Table 3
Level of Service Criteria for Roadways and Intersections

Level of Service	Volume/Capacity (v/c)	Delay per Vehicle (seconds)	Description
A	≤10	≤ 10	Free flow; insignificant delays
B	>10 and ≤ 20	>10 and ≤ 20	Stable operation; minimal delays
C	>20 and ≤ 35	> 20 and ≤ 35	Stable operation; acceptable delays
D	>35 and ≤ 55	>35 and ≤ 55	Approaching unstable flow; queues develop rapidly but no excessive delays
E	>55 and ≤ 80	> 55 and ≤ 80	Unstable operation; significant delays
F	>80	> 80	Forced flow; jammed conditions

Current Roadway Segment Conditions — LOS

Level of service standards for the roadways and intersections in the vicinity of the HBEP are established by and under the jurisdiction of two different agencies: the Orange County Transportation Authority (OCTA) and the city of Huntington Beach. Staff used these LOS standards to evaluate potential HBEP-generated traffic impacts. The following is a list of the applicable LOS standards:

- Orange County Congestion Management Program (CMP)
  The CMP, which is under the jurisdiction of OCTA, establishes that the lowest acceptable performance standard for CMP intersections is LOS E. Seven CMP intersections are located within the city of Huntington Beach, but only one would be affected by the HBEP: Beach Boulevard at PCH.

- City of Huntington Beach Circulation Element
  The Circulation Element is a required chapter of the city General Plan which evaluates the long-term transportation needs of the city and provides a plan to accommodate those needs. The major Circulation Element Policy, CE2.1.1, requires the minimum level of service standard for city intersections during peak hours is LOS D.

  The city of Huntington Beach is in the process of updating the Circulation Element and has prepared a Legislative Draft (November 1, 2012) and Environmental Impact Report (August 2012, SCH2009071117). This update has not yet been adopted by the city council.

OTHER TRANSPORTATION SYSTEMS

Freight and Passenger Rail

A Union Pacific Railroad rail line is located in the city which parallels Gothard Street and runs north/ south from the northern city limits to just north of Garfield Avenue. Several spur lines provide access to manufacturing uses and lumber yards. There are currently no passenger rail lines within the city limits.

Bus Service

The Orange County Transportation Authority (OCTA) provides public transportation in the city. Within the city limits, OCTA operates 16 bus lines providing local and regional service. To encourage ridership, two park and ride facilities are located within the city. The facilities are located at the Goldenwest Transit Center at Gothard Street and Center Avenue and at the McDonnell Douglas Corporation at Bolsa Avenue and Bolsa Chica Street.

Bicycle and Pedestrian Facilities

The city of Huntington Beach provides a comprehensive network of Class II (on-street, striped) bicycle lanes throughout the city. PCH includes Class II and Class I (off road, paved) bicycle lanes connecting the state and city beaches. The roadways in the project area provide paved pedestrian sidewalks which provide access to the Huntington Beach bike trial and beach access along PCH.

Airports/ Helipads

The nearest public airport is John Wayne/ Orange County Airport which is approximately six miles east of the project site. There are six private or public helipads within seven miles of the project site. The nearest helipads are operated by the city of Huntington Beach at the civic center and the police department which are 2.5 and 3.5 miles away respectively.

DIRECT/INDIRECT IMPACTS AND MITIGATION

The direct and indirect impacts of the proposed HBEP on traffic and transportation system are discussed in this section and based on an analysis comparing pre-HBEP and post-HBEP conditions. Staff evaluated the HBEP's impacts for two separate future scenarios: the peak construction month (when construction activity and employment would be maximized) and the first year of full operation. The below roadway segments and intersections were selected for evaluation because they provide the most direct route to the project site and would most likely be affected by project traffic during project construction and operation.

Heavy/ Oversized Loads

As discussed above, the proposed heavy/ oversized load truck trips would occur outside of peak hours during the hours of 10 p.m. to 4 a.m. The traffic analysis conducted by the applicant estimates that the existing LOS along the heavy haul route during transport would be LOS A. The potential impacts as a result of the trips would be minimal. Staff's proposed Condition of Certification **TRANS-3** would require the applicant to obtain the necessary oversize/overweight permits from the appropriate jurisdictions for the transport of components from the Port of Long Beach to AES Alamitos and to the HBEP site. Upon implementation of **TRANS-3,** there would be less than significant impacts resulting from heavy/ oversized loads associated with the HBEP.

Truck Traffic

Construction equipment deliveries and construction-related truck traffic would contribute additional trips during the construction period. Equipment deliveries and construction truck traffic were estimated using a passenger car equivalent (PCE) factor of 1.5 cars per truck. Using this conversion, the anticipated 48 peak construction truck trips would generate approximately 72 PCE average daily trips. As summarized in the **Traffic and Transportation Table 4** below, 10 truck trips would occur in the AM peak hour and 10 in the PM peak hour. The remaining truck trips would occur during typical construction work hours throughout the remainder of the day.

Oversized or overweight trucks with unlicensed drivers could present significant hazards to the general public and/or damage roadways. To ensure that trucks comply with weight, size, and route limitations set by the city of Huntington Beach, county of Orange and Caltrans, and that drivers are properly licensed, staff has included Condition of Certification **TRANS-1** to require the project owner to obtain roadway permits for vehicle sizes and weights, driver licensing, and truck routes. However, even properly sized and licensed trucks could damage roadways, creating significant public hazards; for this reason, staff has recommended Condition of Certification **TRANS-2**, which requires that the project owner repair and restore all roads damaged during construction activities.

Total Construction Traffic

The HBEP construction period is proposed to begin in the first quarter of 2015 commencing with the demolition of existing electricity generating units. The estimated completion of construction is the third quarter of 2022. The maximum number of workers is estimated to be 331 workers during peak the construction period ((HBEP 2013t TN 69961).

The total workforce and truck trips generated during peak construction would be 734 daily one-way trips (662 worker trips added to 72 PCE truck trips). Approximately 672 of these one-way trips would occur during peak hours: 336 during the morning and evening peak hours (HBEP 2012a). **Traffic and Transportation Table 4,** summarizes all peak construction traffic generated by the HBEP.

Traffic and Transportation Table 4
One-Way Trips during Construction Period

Vehicle Type	Average Daily Trips (ADT)	AM Peak Hour[3] Trips		PM Peak Hour[4] Trips	
-	-	In	Out	In	Out
Delivery/ Haul Trucks[1]	48	3	3	3	3
PCE (1.5)[2]	72	5	5	5	5
Workers	662	331	-	-	331
Total Construction Traffic In PCE	734	336	5	5	336

[1]Worker traffic during the peak construction period. These figures assume the worst case traffic scenario of one worker per car.
[2] Passenger Car Equivalent (PCE) is a ratio of 1.5 passenger cars for each truck.
[3] The AM peak hour is 7:00 a.m.-9:00 a.m.
[4] The PM peak hour is 4:00 p.m.-6:00 p.m.
Source:HBEP2012a

Traffic and Transportation Table 5
Affected Intersections: AM Peak Hour Trips and LOS during Peak Construction

Intersection	AM Peak Hour			
	Existing		With Project	
	Delay (seconds)	LOS	Delay (seconds)	LOS
Beach Boulevard and Highway 1	**40**	**D**	**45**	**D**
Newland Street and Highway 1	**9**	**A**	**16**	**B**
Newland Street and Hamilton Avenue	**10**	**A**	**11**	**B**
Brookhurst Street and Highway 1	**37**	**D**	**37**	**D**
Magnolia Street and Highway 1	**13**	**B**	**13**	**B**

Traffic and Transportation Table 6
Affected Intersections: PM Peak Hour Trips and LOS during Peak Construction

Intersection	PM Peak Hour			
	Existing		With Project	
	Delay (seconds)	LOS	Delay (seconds)	LOS
Beach Boulevard and Highway 1	57	E	61	E
Newland Street and Highway 1	8	A	8	A
Newland Street and Hamilton Avenue	14	B	22	C
Brookhurst Street and Highway 1	121	F	122	F
Magnolia Street and Highway 1	15	B	15	B

For affected local road segments, **Traffic and Transportation Table 5** and **Table 6** compare the existing AM and PM peak hour LOS during the peak construction period. As reflected in **Traffic and Transportation Table 6** above, two intersections have been identified as currently operating below LOS D during the PM peak hour: Beach Boulevard/ PCH and Brookhurst Street/ PCH. In the worst case scenario for traffic impacts associated with the HBEP, the project would result in a 7 percent increase in traffic at the Beach Blvd./Hwy 1 intersection and a less than 1 percent increase in traffic at the Brookhurst St./PCH intersection. While the temporary increase in traffic due to construction operations is minimal, two of the affected intersections presently operate below adopted LOS thresholds. To avoid worsening the LOS at these intersections, staff is recommending Condition of Certification **TRANS-3** which would require the applicant to develop a Traffic and Control Plan (TCP). The TCP would require the applicant to monitor affected intersections and provide alternate routes and if necessary avoid the existing failing intersections to ensure minimal impacts to local roadways during project construction.

Linear Facilities

The HBEP would utilize a site already developed with an electrical generating facility. No new off-site linears would be required that will affect the transportation roadway system in the project area. There would be no traffic impacts associated with the construction of off-site linears as part of the project.

Construction Workforce Parking and Laydown Area

HBEP construction would require 331 workers on-site during the peak construction period (HBEP2012a). The applicant has proposed on-site and off-site parking areas to accommodate the workers. The proposed parking areas are listed in **Traffic and Transportation Table 7** below and are identified in **Traffic and Transportation Figure 4.** The parking areas designated by the applicant would accommodate over 1,000 parking spaces which would be more than adequate for the highest number of workers anticipated for HBEP construction.

Traffic and Transportation Table 7
HBEP Construction Parking Areas

Parking Area Location	Parking Area size	Number of Spaces (approximately)
On-site at HBEP	1.5-acres	130
Plains All American Tank Farm, adjacent to HBEP	1.9-acres	170
Graded area West of HBEP site on Newland Street	3-acres	300
Graded area NE corner of PCH and Beach Blvd.	2.5-acres	215
Huntington Beach City Parking Area SW corner of PCH and Beach Blvd.	N/A	225
Total Number of Spaces		1,040

Source: Adaptation from HBEP2012a

The applicant proposes to use shuttles to transport construction workers from the off-site parking areas to the project site. The applicant estimates the number of shuttle trips would be13 round trips from the city of Huntington Beach parking area, 13 round trips from the parking area at the corner of PCH and Beach Boulevard, and 10 trips from the Plains All American Tank Farm. (HBEP2012b). Based on the off-site parking proposal, the amount of construction parking spaces is more than adequate to park the construction workforce during the peak construction period. Staff is recommending Condition of Certification **TRANS-3** which would require the applicant to prepare a traffic control plan to ensure all construction worker parking is in place as designated in this analysis. Upon implementation of the plan, construction workforce parking impacts would be less than significant.

Transportation of Hazardous Materials and Waste

During construction, no acutely hazardous materials would be used or stored onsite. The low-level hazardous materials planned for use during construction include gasoline, diesel fuel, oil, lubricants, cleaners, solvents, adhesives, and paint materials. Transportation of these materials would pose less than significant hazards to the public.

Please refer to the **Hazardous Materials Management** section for a detailed description of hazardous waste associated with the project and proposed conditions of certification for the HBEP.

Aviation Impacts

The HBEP site is approximately 6 miles west of the nearest public airport. There would be no aviation impacts anticipated as part of the construction of HBEP. Title 14, Part 77 of the Code of Federal Regulations requires FAA notification for any proposed construction feature that would be 200 feet or taller above ground level. For project compliance with FAA regulations, staff is proposing Condition of Certification **TRANS-6**, which would require the project owner to submit a Form 7460-1 “Notice of Proposed Construction or Alteration” to the FAA for any construction equipment (e.g. cranes) that may exceed the height restrictions.

HBEP Construction Impacts Conclusion

With implementation of the conditions of certification discussed in this analysis, construction of the HBEP would result in less than significant impacts to the traffic and transportation system in the project vicinity.

Operational Impacts and Mitigation

Workforce Traffic

The construction of HBEP Block 1 is expected to be completed in the fourth quarter of 2018 and Block 2 to be completed by the second quarter of 2020. The facility would be staffed by 33 permanent workers in three rotating shifts (HBEP 2011a).

The existing electrical generating facility at the HBEP site is currently in operation and employs 33 workers (HBEP2013b). The current and proposed operations workforce is summarized in **Traffic and Transportation Table 8**.

Traffic and Transportation Table 8
Existing Huntington Beach Generating Station Plant Operation Workforce

Classification	Current HBGS	Proposed HBEP
Plant Manager	1	1
Operations Leader	1	1
Maintenance Leader	2	1
Environmental Engineer	1	1
Maintenance Planner	1	1
Power Plant Operators	16	20
Controls Specialty	5	5
Mechanic	4	2
Admin	2	1
Total	33	33

Source: HB2013b
*HBGS: Huntington Beach Generating Station which is the existing electrical generating facility in operation at the project site.
Source:

Upon full operation of the HBEP and following the demolition of all existing electrical generating facilities, there would be no net increase in workforce traffic as part of HBEP. The applicant anticipates the trip distribution for operations to be: approximately 33 percent from the city of Long Beach and communities northwest of the site, 33 percent from the city of Garden Grove and communities north of the site, and 33 percent from the city of Irvine and communities southeast of the site. There would be a minimal increase in traffic and operations traffic would have a less than significant impact on overall LOS at studied intersections workers may use to access the project site.

Truck Traffic and Hazardous Materials Delivery

Upon operation, the HBEP would require 10 to 12 hazardous materials truck trips per month. These materials may include ammonia, cleaning solvents, diesel fuel, lubricants and other materials associated with HBEP operation. During project operation, aqueous ammonia, a regulated substance, would be delivered to the HBEP facility in accordance with Vehicle Code Section 32100.5, which addresses the transportation of hazardous materials that pose an inhalation hazard (HBEP 2011a). This section of the Vehicle Code requires the transporters of hazardous materials to use adopted travel routes and to avoid heavily populated or congested areas. The applicant’s proposed routes for hazardous material deliveries are generally the same as for regular truck deliveries. The routes used would be via I-405 to Beach Blvd. to PCH to Newland to the HBEP project site. The approximately six-mile long route is characterized predominantly by commercial and retail uses. There is an increase in hotels, single family and multi-family residential uses along Beach Blvd., south of Adams Ave. nearer the coast. Beach Blvd. is a Caltrans maintained State Route (SR39) which is the most direct route from I-405 to the project site and is an adopted truck route by both Caltrans and the city of Huntington Beach.

Delivery of aqueous ammonia may be hazardous to the public if a spill were to occur. Therefore, staff recommends Condition of Certification **TRANS-5** to ensure that the project owner contracts with licensed hazardous materials and waste hauler companies that comply with all applicable regulations and obtain the proper permits and/or licenses from Caltrans and the county of Orange. For more information on hazardous materials used during project operation and applicable regulations, see the **Hazardous Materials Management** section of this Staff Assessment.

Parking

As indicated earlier, operations of the HBEP would employ a total of 33 operations staff. The plant would be operated in three rotating shifts and staffed 24 hours a day, seven days a week. As shown in Figure 2.1-1, 'General Arrangement/ Site Plan,' in the AFC, workforce parking would be provided adjacent to the administration/ maintenance building and would provide sufficient on-site parking. See the **Land Use** section for additional information regarding parking and site plan configurations.

Emergency Access

Energy Commission staff does not anticipate emergency access issues to the project site. The site is directly accessed via Newland Avenue which would not present any obstructions or design challenges for emergency vehicles to access the site. Staff has recommended Condition of Certification **TRANS-3** which includes a requirement that the Traffic Control Plan demonstrates and ensures sufficient access. On-site circulation of emergency vehicles would be subject to site plan review by the city of Huntington Beach Fire Department per conditions of certification in the **Worker Safety and Fire Protection** section of this Staff Assessment.

Airport Operations and Hazards

Title 14, Part 77 of the Code of Federal Regulations requires FAA notification for any proposed structure that would be 200 feet or taller above ground level. No structures are proposed that would exceed 200 feet in height. The tallest structures would be the power block stacks which would be 120 feet tall (HBEP2012a). These stacks would be shorter than the 200-foot height threshold, meaning that they would not penetrate navigable airspace and would not require notification of the FAA.

Thermal Plumes
The HBEP gas turbines and air cooled condensers (ACC) have the potential to generate thermal plumes during worst case conditions. These conditions would be full operation of HBEP during calm or very low wind meteorological conditions. High velocity thermal plumes have the potential to affect aviation safety and the FAA has amended the Aeronautical Information Publication to establish thermal plumes as flight hazards. Aircraft flying through thermal plumes may experience significant air disturbances, such as turbulence and vertical shear.

In the vicinity of the HBEP, there is a potential for low flying aircraft to be affected by the thermal plumes. Helicopters and small aircraft are routinely observed flying along Huntington Beach and areas near the project site.

Energy Commission staff uses a 4.3 meters per second (m/s) vertical velocity threshold for determining whether a plume may pose a hazard to aircraft. This velocity generally defines the point at which general aviation aircraft begin to experience more than light turbulence. Exhaust plumes with high vertical velocities may damage aircraft airframes or cause turbulence resulting in loss of aircraft control and maneuverability (FAA 2006).

The plume velocity analysis conducted by staff concludes that the plumes generated by the HBEP would exceed 4.3 m/s between 500 feet and 1,740 feet above the HBEP under worst case conditions. This would generate a potential impact to aircraft if they were to fly over the HBEP at low altitude. Therefore, staff has proposed Condition of Certification **TRANS-7** which would require notification in accordance with FAA requirements to advise pilots of the potential overflight hazard associated with thermal plumes generated by the HBEP and the need to avoid overflight below 1,740 feet AGL. Notification requirements may include issuance of a Notice to Airmen (NOTAM), revision to local sectional charts, and addition of a new remark to the Automated Surface Observing System (ASOS). Upon implementation of **TRANS-7** the potential impacts to aviation would be less than significant. Based on the small number of aircraft likely to fly over the HBEP and the presence of available flight paths to avoid the thermal plumes, pilots would have the ability to safely avoid the HBEP thermal plumes. See **Appendix TT-1** for detailed results of staff's plume velocity analysis for the HBEP.

HBEP Operation Impacts Conclusion
With implementation of the conditions of certification discussed above, impacts to ground and air transportation from operation of the HBEP would be less than significant.

CUMULATIVE IMPACTS

A project may result in a significant adverse cumulative impact when its effects are cumulatively considerable. Cumulatively considerable means that the incremental effects of an individual project are significant when viewed in connection with the effects of (1) past projects; (2) other current projects; and (3) probable future projects (California Code of Regulations, Title 14, Section 15130).

To analyze the cumulative effect of the project with reasonably foreseeable projects, Section 15130(b) of the CEQA Guidelines allows a lead agency to analyze cumulative impacts by either:

(A) A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency, or

(B) A summary of projections contained in an adopted local, regional or statewide plan or related planning document, that describes or evaluates conditions contributing to the cumulative effect.

Cumulative Traffic Impacts

Staff reviewed known past, current, and probable future projects in the vicinity of the proposed HBEP project, which staff defined as the city of Huntington Beach, and the surrounding cities of Seal Beach and Newport Beach. Trips generated by these projects occur within the transportation network used by HBEP and may combine with HBEP trips to result in cumulative impacts to the level-of-service (LOS) of nearby highways, roadways, and intersections. These roadways are identified in **Traffic and Transportation Figure 2.** The cumulative projects are listed in **Traffic and Transportation Table 9** below.

Projects identified in the cumulative projects list have either included mitigation measures requiring the payment of fees to the city of Huntington Beach in accordance with Chapter 17.65 of the Municipal Code “Fair Share Traffic Impact Fee” or been required to make road improvements to directly reduce the traffic impacts associated with their project. Payment of these fees would ensure the direct impacts to affected roadways would be addressed as part of the city’s Capital Improvement Program or the road improvements required as part of the cumulative projects identified in **Traffic and Transportation Table 9** would directly reduce the potential impacts to within acceptable city LOS standards.

As discussed above, staff has determined that upon implementation of the recommended Conditions of Certification **TRANS-1** through **TRANS-4**, all traffic related direct impacts would be less than significant. All direct impacts with HBEP have been mitigated and the project’s incremental effects would not be cumulatively considerable.

Traffic and Transportation Table 9
Development Considered in the Cumulative Condition[1]

Project Number	Project	Distance from Project Site	Project Description	Status of Project
1	**Archstone Residential Project**	6 miles N	**Multifamily residential development of up to 510 units**	Pending under City Review
2	**Ascon Landfill Site**	Within 1 mile N	**Industrial and oil field waste removal from landfill**	On-going/ monitor
3	**Beach and Ellis- Mixed Use Development**	3.5 miles N	274 unit apartment complex, including 8,500 sq ft of commercial property and 48,000 sq ft of open space.	Under Review The tentative map for this project is in process.
4	**Beach Walk**	2 miles N	Development of 173 multi-family apartment units within a 4-story building	Approved March 2012 Building permits in plancheck
5	**Beach and Warner Mixed Use Project**	4.75 miles N	Development of up to 279 residential units, 31,200 sq ft of retail space, and 6,000 sq ft of restaurant space, on 9.4 acres.	EIR certified 12/19/11 City in Litigation filed 1/23/12
6	**Brightwater**	6 miles NW	105.3 acre residential subdivision, including 349 single-family residences	Approved under construction
7	**Edinger Wal-Mart**	6 miles N	Development of a Wal-Mart in the existing, 100,000 sq ft vacant building	Under environmental review
8	**Former Lamb School Site**	3 miles NE	Construction of a Planned Unit Development (PUD) consisting of 81 detached single-family homes on 11.65 acres	No action taken by Planning Commission in Sept. 2012, No planned date for construction.
9	**Former Wardlow School Site**	2.15 miles NE	Construction of a PUD consisting of 49 detached single-family homes on 8.35 acres	No action taken by Planning Commission in Sept. 2012, no action taken. No planned date for construction.
10	**Harmony Cove**	6.75 miles NW	Development of a 23-boat slip marina, an eating and drinking establishment, and ancillary uses to the marina, on 2.28 acres	No action taken by Planning Commission in Oct. 2012, no action taken. No planned date for construction.
11	**Hilton Waterfront Beach Resort Expansion**	1 mile W	Expansion of existing resort, including a nine-story tower providing a total of 156 new guestrooms.	Approved by Planning Commission in March 2012. No planned date for construction.
12	**Huntington Beach Lofts**	6.15 miles N	Planned 385 residential units located on 3.8 acres	Planning Commission approved Sept 2012. No planned date for construction.
12	**The Boardwalk**	6 miles N	487 dwelling units and 14,500 sq ft commercial area on 12.5 acres	Planning Commission approved Feb. 2011. No planned date for construction.
14	**Oceana Apartments**	3.6 miles N	100 affordable housing units on 2 acres	Completed preliminary plan review Nov 2012. No planned date for construction
15	**Parkside Estates**	5.75 miles NW	50-acre parcel with 111-single family residences planned	Approved by Coastal Commission Oct 2012. No planned date for construction.

Project Number	Project	Distance from Project Site	Project Description	Status of Project
16	**Pierside Pavilion Expansion**	1.5 miles NW	Expansion of the existing Pierside Pavilion development	Approved by City Council Sept. 2012. No planned date for construction.
17	**Beach Boulevard/ Edinger Corridors Specific Plan**	Varies	Enhancement and maximizing of economic opportunities along Beach Blvd and Edinger Ave	Completed
18	**Bella Terra Costco**	6 miles N	Development of a Costco store on the former location of Mervyns and Montgomery Wards stores	Completed
19	**Pacific Shores Residential Project**	0.5 miles NW	204 multi-family residential units and 2 acre park	Completed
20	**The Strand**	1.6 NW	Hotel, retail, restaurants, and parking	Completed
21	**Pacific City**	1.3 miles NW	31-acre site broken into 3 parcels. One for 516 residential condos and two for commercial, retail and hotel	Entitlements approved 2004, permits pending
22	**The Ridge**	5.8 miles NW	5-acre site, looking to change current land use designations from Open Space-Park to Residential Low-Density to develop 22-single family residences	Project entitlements approved 2004, project amendment pending
23	**The Villa at Bella Terra**	6 miles N	Plans for 538 residential units, over 400,000 sq ft of commercial uses, and a hotel	Pending
24	**Beach Boulevard and Warner Avenue Intersection and Improvement Program (IIP)**	5 miles NW of project site	Widening Capacity Improvements- Beach Boulevard and Warner Avenue.	Project is for PS&E (plans, specifications, and estimates), environmental studies and right-of-way engineering only.
25	**Brookhurst Street and Adams Avenue IIP**	2.5 miles NE of project site	Widening Capacity Improvements- Brookhurst Street & Adams Avenue	Project is for PS&E and environmental studies and right-of-way engineering only

COMPLIANCE WITH LORS

Traffic and Transportation Table 10 provides an assessment of the HBEP's compliance with applicable laws, ordinances, and regulations (LORS) pertaining to traffic and transportation.

Traffic and Transportation Table 10
Project Compliance with Adopted Traffic and Transportation LORS

Applicable Law	Description	Consistency
Federal		
Title 49, Code of Federal Regulations, Parts 171-177	Requires proper handling and storage of hazardous materials during transportation.	**Consistent.** The project owner would conform to this law by requiring shippers of hazardous materials to use the required markings on their transportation vehicles. Also, **TRANS-5** ensures compliance by requiring the project owner to contract with licensed hazardous material and waste hauler companies.
Title 14, Code of Federal Regulations, Section 77.13 (2)(i)	This regulation requires the project owner to notify the Federal Aviation Administration (FAA) of construction structures with a height greater than 200 feet from grade or greater than an imaginary surface extending outward and upward at a slope of 100 to 1 from the nearest point of the nearest runway of an airport with at least one runway more than 3,200 feet in length.	**Consistent.** The HBEP would not include structures 200 feet tall or higher and does not exceed the 100 to 1 slope threshold of an operating airport and therefore does not require the project owner to file FAA Form 7460-1, Notice of Proposed Construction or Alteration. However, construction of the HBEP may involve cranes exceeding 200 feet in height. For project compliance with FAA regulations, staff is proposing Condition of Certification **TRANS-6**, which would require the project owner to submit a Form 7460-1 "Notice of Proposed Construction or Alteration" for construction equipment that would exceed 200 feet.
State		
California Vehicle Code, Sections 13369, 15275, 15278	Requires licensing of drivers and the classification of license for the operation of particular types of vehicles. A commercial driver's license is required to operate commercial vehicles. An endorsement issued by the Department of Motor Vehicles (DMV) is required to drive any commercial vehicle identified in Section 15278.	**Consistent.** The project owner would require that contractors and employers be properly licensed and endorsed when operating such vehicles. **TRANS-1**, which requires proper driver licensing, ensures compliance.

Applicable Law	Description	Consistency
California Vehicle Code, Sections 31303-31309	Requires transportation of hazardous materials to be on the state or interstate route that offers the shortest overall transit time possible.	**Consistent.** The project owner would require shippers of hazardous materials to use the shortest route possible to and from the project site. The proposed routes are consistent with this requirement. Also, **TRANS-5** (see above for explanation) ensures compliance.
California Vehicle Code, Sections 31600-31620	Regulates the transportation of explosive materials.	**Consistent.** The HBEP would not use explosive materials as defined in Section 12000 of the Health and Safety Code.
California Vehicle Code, Sections 32100-32109	Requires shippers of inhalation hazards in bulk packaging comply with rigorous equipment standards, inspection requirements, and route restrictions.	**Consistent.** The project owner would require shippers of inhalation hazards (including ammonia) to comply with all route restrictions, equipment standards, and inspection requirements. Also, **TRANS-5** (see above for explanation) requires compliance.
California Vehicle Code, Sections 34000-34100	Establishes special requirements for vehicles having a cargo tank and for hazardous waste transport vehicles and containers, as defined in Section 25167.4 of the Health and Safety Code.	**Consistent.** The project owner would require shippers of hazardous materials to maintain their hazardous material transport vehicles in a manner that would enable the vehicles to pass California Highway Patrol inspections. Also, **TRANS-5** (see above for explanation) requires compliance.
California Vehicle Code, Section 35550	Regulates weight guidelines and restrictions upon vehicles traveling on freeways and highways. A single axle load shall not exceed 20,000 pounds, the load on any one wheel or wheels supporting one end of an axle is limited to 10,500 pounds, and the front steering axle load is limited to 12,500 pounds.	**Consistent.** The project owner would ensure compliance with weight restrictions and would require heavy haulers to obtain necessary permits prior to delivery of any heavy haul load. Also, **TRANS-1** (which requires the project owner to comply with limitations on vehicle sizes and weights, driver licensing, and truck routes) requires compliance.
California Vehicle Code, Section 35551	Defines the maximum overall gross weight as 80,000 pounds and mandates that the gross weight of each set of tandem axles not exceed 34,000 pounds.	**Consistent.** The project owner would require compliance with weight restrictions and would require heavy haulers to obtain necessary permits prior to delivery of any heavy haul load. Also, **TRANS-1** (see above for explanation) requires compliance.
California Vehicle Code, Section 35780	Requires a single-trip transportation permit to transport oversized or excessive loads over state highways.	**Consistent.** The project owner would comply with this code by requiring that heavy haulers obtain a Single-Trip Transportation Permit for oversized

Applicable Law	Description	Consistency
		loads. Also, **TRANS-1** (see above for explanation) requires compliance.
California Streets and Highways Code, Sections 660, 670, 672, 1450, 1460, 1470, 1480 et seq., 1850-1852	Requires encroachment permits for projects involving excavation in state and county highways and city streets.	**Consistent.** The project owner would comply by acquiring the necessary permits and approval from Caltrans, the city of Huntington Beach and county of Orange with regard to encroachment into public rights-of-way, as required by **TRANS-4**.
California Health and Safety Code, Section 25160	Addresses the safe transport of hazardous materials	**Consistent.** The project owner would comply by requiring that shippers of hazardous wastes are properly licensed by the Department of Toxic Substances Control (DTSC), and that hazardous waste transport vehicles are in compliance with DTSC requirements. **TRANS-1** and **TRANS-5** (see above for explanation) require compliance.
California Department of Transportation CA MUTCD Part 6 (Traffic Manual)	Provides traffic control guidance and standards for continuity of function (movement of traffic, pedestrians, bicyclists, transit operations), and access to property/utilities when the normal function of a roadway is suspended.	**Consistent.** **TRANS-3** requires the project owner to prepare and implement a Traffic Control Plan.
Local		
City of Huntington Beach General Plan, Chapter III Circulation Element	Policy CE2.1.1.Requires development projects to provide associated road improvements necessary to achieve a level of service of "D" at all intersections except for those intersections identified in the General Plan as already operating below LOS D during peak hours.	**Consistent.** As shown in **Traffic and Transportation Tables 5** and **6,** the applicant has identified two of the affected intersections currently operate below LOS D, Beach Blvd/ PCH and Brookhurst St/ PCH. **TRANS-3** would require the applicant to prepare a Traffic Control Plan which would monitor the affected intersections and use alternate routes in the construction traffic.
City of Huntington Beach Municipal Code Chapter 17.65 Fair Share Traffic Impact Fee	Enables the city to implement transportation impact fee programs. Requires payment of fees that constitute the proposed project's fair share contribution towards construction costs of intersections and traffic signals or future city approved alternatives. The fee shall be assessed in accordance with the Fair Share Traffic Impact Fee Ordinance.	**Consistent.** The city of Huntington Beach reviewed the project and determined this fee would not be applicable (HB City 2013a).

Applicable Law	Description	Consistency
City of Huntington Beach Municipal Code Title 10-Vehicles and Traffic, Section 10.32.040. Movement of Overloads.	Requires an oversize vehicle permit issued by the city of Huntington Beach director of public works for operation of vehicles that exceed weight or measurement requirements of the Vehicle Code.	**Consistent.** **TRANS-5** would require the applicant to obtain the necessary permits associated with the heavy haul plan and provide copies of the permit to the CPM.
County of Orange Code of Ordinances. Title 6 Highways, Bridges, Rights-of-Way, Division 4 Traffic Ordinances, Article 7 Size, Weight, and Load Sec. 6-4-701 Permits.	Requires an oversize vehicle permit issued by the director of public works for operation of vehicles that exceed weight or measurement requirements of the Vehicle Code within Orange County.	**Consistent.** **TRANS-5** see above explanation.
City of Seal Beach, Municipal Code Title 8 Vehicles and Traffic, Section 8.10.135 Movement of Oversize Vehicles.	Requires an oversize vehicle permit issued by the director of public works for operation of vehicles that exceed weight or measurement requirements of the Vehicle Code within the city of Seal Beach.	**Consistent.** **TRANS-5** see above explanation.
City of Long Beach Municipal Code Title 10 Vehicles and Traffic, Chapter 10.41 Use of streets by Overweight Vehicles. 10.41.020 Special Permit Required	Requires an oversize vehicle permit issued by the director of public works for operation of vehicles that exceed weight or measurement requirements of the Vehicle Code within Los Angeles County.	**Consistent.** **TRANS-5** see above explanation.
Los Angeles County Code, Title 16- Highways, Chapter 16.22 Moving Permits, 16.22.030 Moving Permit issuance conditions for overweight loads.	Requires an oversize vehicle permit issued by the director of public works for operation of vehicles that exceed weight or measurement requirements of the Vehicle Code within Los Angeles County.	**Consistent.** **TRANS-5** see above explanation.

NOTEWORTHY PUBLIC BENEFITS

Neither the applicant nor staff has identified any traffic-related benefits associated with the proposed HBEP project.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Staff received the following comments on aspects of the proposed HBEP project related to traffic and transportation:

City of Huntington Beach

In the city's December 6, 2012 letter, city staff identified discrepancies in the traffic analysis presented in the AFC and a recent Beach Boulevard Specific Plan traffic study conducted in the project area (HB City 2012). Energy Commission staff forwarded the city's comments to the applicant and requested the intersection of PCH and Magnolia Street be included in the analysis in staff's Data Requests Set Two (CEC2012d).

In the applicant's submittal of Data Responses to Staff's Data Requests, the PCH/ Magnolia Street intersection was added to the traffic analysis and is reflected in **Traffic and Transportation Tables 5** and **6.** The applicant explained the discrepancies in the traffic LOS figures were due to the use of a newer traffic analysis software (Synchro 7) and more conservative assumptions used in the traffic model (HBEP 2013c). Staff has determined the applicant's traffic analysis and conservative input assumptions to be reasonable and do not affect staff's conclusion that upon implementation of the recommended conditions of certification; the HBEP would not result in significant traffic impacts.

Traffic and Transportation Table 11
HBEP AFC vs. City Beach Blvd SP LOS Figures

Intersection	AM Peak Hour				PM Peak Hour			
	HBEP AFC		Beach Blvd. SP		HBEP AFC		Beach Blvd. SP	
	Delay/ ICU	LOS	Delay/ ICU	LOS	Delay/ ICU	LOS	Delay/ ICU	LOS
Beach Boulevard Highway 1	40	D	31	C	57	E	26	C
Newland Street Highway 1	9	A	23	C	7	A	17	B
Newland Street Hamilton Avenue	10	A	0.41	A	14	B	0.56	A
Brookhurst Street Highway 1	37	D	31	C	121	F	31	C
Magnolia Street Highway 1	13	B	0.64	B	15	B	066	B

CONCLUSIONS

Staff has analyzed the proposed HBEP's impacts to the nearby traffic and transportation system. With implementation of the proposed conditions of certification listed below, the HBEP would comply with all applicable LORS related to traffic and transportation and would result in less than significant impacts to the traffic and transportation system.

1. Implementation of Condition of Certification **TRANS-1** would require the applicant to comply with applicable jurisdictions' requirements of vehicle size and weights, vehicle licensing, truck routes and other applicable limitations. The applicant would also be required to obtain all necessary transportation permits for roadway use.
2. Implementation of Condition of Certification **TRANS-2** would require the project applicant to restore any road, easement or right-of-way damaged by project construction.
3. Implementation of Condition of Certification **TRANS-3** would require the applicant to prepare and implement a traffic control plan (TCP) that would ensure sufficient parking during project construction and operation. The TCP would require that the applicant obtain all necessary permits for the transport of construction-related materials during site mobilization and maintain adequate emergency access for the duration of project construction and operation.
4. Implementation of Condition of Certification **TRANS-4** would require the applicant to obtain the necessary encroachment permits from applicable jurisdictions.
5. Implementation of Condition of Certification **TRANS-5** would require the applicant to obtain the necessary permits for the transport of all hazardous waste associated with the project.

6. Implementation of Condition of Certification **TRANS-6** would require the applicant to implement all necessary obstruction marking and lighting in accordance with FAA requirements.
7. Implementation of Condition of Certification **TRANS-7** would require the applicant to advise pilots of the potential aviation hazards associated with thermal plumes and to avoid overflight of the facility below 1,740 feet.

PROPOSED CONDITIONS OF CERTIFICATION

TRANS-1 Roadway Use Permits and Regulations
The project owner shall comply with limitations imposed by the California Department of Transportation (Caltrans) and other relevant jurisdictions, including the city of Huntington Beach and county of Orange, on vehicle sizes and weights, driver licensing, and truck routes. In addition, the project owner or its contractor shall obtain necessary transportation permits from Caltrans and all relevant jurisdictions for roadway use.

<u>Verification:</u> In the Monthly Compliance Reports (MCRs), the project owner shall submit copies of any permits received during that reporting period. In addition, the project owner shall retain copies of these permits and supporting documentation in its compliance file for at least six months after the start of commercial operation.

TRANS- 2 Restoration of All Public Roads, Easements, and Rights-of-Way
The project owner shall restore all public roads, easements, and rights-of-way that have been damaged due to project-related construction activities. Restoration of significant damage which could cause hazards (such as potholes) must take place immediately after the damage has occurred. The restoration shall be completed in a timely manner to the road's original condition in compliance with the applicable jurisdiction's (city of Huntington Beach and county of Orange) standards.

<u>Verification:</u> Prior to the start of site mobilization, the project owner shall photograph or videotape all affected public roads, easements, right-of-way segment(s), and/or intersections. The project owner shall provide the photograph or videotape to the CPM and the affected local jurisdiction(s). The purpose of this notification is to request that these jurisdictions consider postponement of any planned public right-of-way repair or improvement activities in areas affected by project construction until construction is completed, and to coordinate any concurrent construction-related activities that cannot be postponed.

If damage to public roads, easements, or rights-of-way occurs during construction, the project owner shall notify the CPM and the affected local jurisdiction(s) to identify sections of public right-of-way to be repaired. At that time, the project owner shall establish a schedule for completion and approval of the repairs. Following completion of any public right-of-way repairs, the project owner shall provide to the CPM letters signed by the affected local jurisdiction(s) stating their satisfaction with the repairs.

TRANS-3 Traffic Control Plan, Heavy Hauling Plan, and Parking/Staging Plan
The project owner shall prepare and implement a Traffic Control Plan (TCP) for the HBEP's construction and operations traffic. The TCP shall

address the movement of workers, vehicles, and materials, including arrival and departure schedules and designated workforce and delivery routes. The project owner shall consult with Caltrans, the city of Huntington Beach and other applicable local jurisdictions in the preparation and implementation of the Traffic Control Plan (TCP). The project owner shall submit the proposed TCP to Caltrans and applicable local jurisdictions in sufficient time for review and comment, and to the Energy Commission Compliance Project Manager (CPM) for review and approval prior to the proposed start of construction and implementation of the plan.

The Traffic Control Plan (TCP) shall include:

- Provisions for redirection of construction traffic with a flag person as necessary to ensure traffic safety and minimize interruptions to non-construction related traffic flow,
- Placement of necessary signage, lighting, and traffic control devices at the project construction site and lay-down areas;
- A heavy-haul plan addressing the transport and delivery of heavy and oversized loads requiring permits from the California Department of Transportation (Caltrans), other state or federal agencies, and/or the affected local jurisdictions including Los Angeles county, Orange county, city of Long Beach, city of Seal Beach, and city of Huntington Beach;
- Location and details of construction along affected roadways at night, where permitted;
- Temporary closure of travel lanes or disruptions to street segments and intersections during construction activities;
- Traffic diversion plans (in coordination with the city of Huntington Beach and Orange County) to ensure access during temporary lane/road closures;
- Access to residential and/or commercial property located near construction work and truck traffic routes;
- Insurance of access for emergency vehicles to the project site;
- Advance notification to residents, businesses, emergency providers, and hospitals that would be affected when roads may be partially or completely closed;
- Identification of safety procedures for exiting and entering the site access gate;
- Parking/Staging Plan for all phases of project construction and operation to require all project-related parking to be on-site or in designated off-site parking areas.

Verification: At least 60 calendar days prior to the start of construction, the project owner shall submit the TCP to the applicable agencies for review and comment and to the CPM for review and approval. The project owner shall also provide the CPM with a copy of the transmittal letter to the agencies requesting review and comment.

At least 30 calendar days prior to the start of construction, the project owner shall provide copies of any comment letters received from the agencies, along with any changes to the proposed development plan, to the CPM for review and approval.

TRANS-4 Encroachment into Public Rights-of-Way

Prior to any ground disturbance, improvements, or obstruction of traffic within any public road, easement, or right-of-way, the project owner or its contractor(s) shall coordinate with all relevant jurisdictions, including the city of Huntington Beach, Orange county and Caltrans, to obtain all required encroachment permits and comply with all applicable regulations.

Verification: At least 10 days prior to ground disturbance or interruption of traffic in or along any public road, easement, or right-of-way, the project owner shall provide copies of all permit(s), relevant to the affected location(s), received from Caltrans or any other affected jurisdiction/s to the CPM. In addition, the project owner shall retain copies of the issued/approved permit(s) and supporting documentation in its compliance file for a minimum of 6 months after the start of commercial operation.

TRANS-5 Hazardous Materials

The project owner shall ensure that permits and/or licenses are secured from the California Highway Patrol, Caltrans and all other relevant jurisdictions for the transport of hazardous materials.

Verification: The project owner shall include in the MCRs copies of all permits/ licenses acquired by the project owner and/or subcontractors concerning the transport of hazardous substances during that reporting period.

TRANS-6 Obstruction Marking and Lighting

The project owner shall install blinking obstruction marking and lighting on any construction equipment that exceeds 200 feet in height in accordance with FAA requirements, as expressed in the following documents:

- FAA Advisory Circular 70/7460-1K
- FAA Safety Alert for Operators (SAFO) 09007.

Lighting shall be operational 24 hours a day, 7 days a week for the duration of project construction. Upgrades to the required lighting configurations, types, location, or duration shall be implemented consistent with any changes to FAA obstruction marking and lighting requirements.

Verification: At least 60 days prior to the start of construction, the project owner shall submit to the CPM for approval final design plans for construction equipment depicting the required air traffic obstruction marking and lighting.

At least 60 days prior to site mobilization, the project owner shall install permanent obstruction marking and lighting consistent with FAA requirements and shall inform the CPM in writing within 10 days of installation. The lighting shall be inspected and approved by the CPM (or designated inspector) within 30 days of installation.

TRANS-7 Pilot Notification and Awareness

The project owner shall initiate the following actions to ensure pilots are aware of the project location and potential hazards to aviation:

- Submit a letter to the FAA requesting a Notice to Airmen (NOTAM) be issued advising pilots of the location of the HBEP and recommending avoidance of overflight of the project site below 1,740 feet AGL. The letter should also request that the NOTAM be maintained in active status until all navigational charts and Airport Facility Directories (AFDs) have been updated.
- Submit a letter to the FAA requesting a power plant depiction symbol be placed at the HBEP site location on the San Diego Sectional Chart with a notice to "avoid overflight below 1,740 feet AGL".
- Request that Southern California TRACON submit aerodrome remarks describing the location of the HBEP plant and advising against direct overflight below 1,740 feet AGL to the:
  - FAA AeroNav Services, formerly the FAA National Aeronautical Charting Office (Airport/Facility Directory)
  - Jeppesen Sanderson Inc. (JeppGuide Airport Directory, Western Region)
  - Airguide Publications (Flight Guide, Western States)

<u>Verification:</u> Within 30 days following the start of construction, the project owner shall submit draft language for the letters of request to the FAA (including Southern California TRACON) to the CPM for review and approval.

At least 60 days prior to the start of operations, the project owner shall submit the required letters of request to the FAA and request that Southern California TRACON submit aerodrome remarks to the listed agencies. The project owner shall submit copies of these requests to the CPM. A copy of any resulting correspondence shall be submitted to the CPM within 10 days of receipt.

If the project owner does not receive a response from any of the above agencies within 45 days of the request (or by 15 days prior to the start of operations) the project owner shall follow up with a letter to the respective agency/ies to confirm implementation of the request. A copy of any resulting correspondence shall be submitted to the CPM within 10 days of receipt.

The project owner shall contact the CPM within 72 hours if notified that any or all of the requested notices cannot be implemented. Should this occur, the project owner shall appeal such a determination, consistent with any established appeal process and in consultation with the CPM. A final decision from the jurisdictional agency denying the request, as a result of the appeal process, shall release the project owner from any additional action related to that request and shall be deemed compliance with that portion of this condition of certification.

REFERENCES

Best 2003 –Aviation Safety and Buoyant Plumes. Presented at the Clean Air Conference, Newcastle, New South Wales, Australia. By Peter Best, Lena Jackson, Mark Kanowski of Katestone Environmental, Toowong, Queensland, Australia and Kevin Spillane of Bendigo, Victoria, Australia.

HBEP 2012a –Huntington Beach Energy Project / CH2MHill (tn 66364). Application for Certification Volume 1 & 2(12-AFC-02), dated June 2012.

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HBEP 2013a- Stoel Rives, LLP. (tn 69074). Huntington Beach Energy Project (12-AFC-02) Request for Extension to Submit Certain Data Requests Contained in CEC Staff's Data Responses Set Two (#73-98) and Objections. January 9, 2013.

HB2013b- Huntington Beach Energy Project/ CH2MHill (tn 69514). E-mail from Applicant re: HBEP Existing Workforce, dated February 12. 2013.

HBEP 2013c- Stoel Rives, LLP. (tn 69564). Huntington Beach Energy Project (12-AFC-02) Applicant's Supplemental Responses to Data Requests, Set 2 (Water Resources #80-83 and Traffic and Transportation #92-94). February 15, 2013.

HB City2012- City of Huntington Beach / City of Huntington Beach (tn 68804). City of Huntington Beach Comments Regarding Huntington Beach Energy Project Docket No. 12-AFC-12 dated December 6, 2012.

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HB City 2009a- City of Huntington Beach, Beach and Edinger Corridors Specific Plan Environmental Impact Report, Volume 1: Specific Plan Draft EIR SCH No. 2008071143 EIR No. 08-008. PBS&J August 2009.

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HB CIP- City of Huntington Beach, Capital Improvement Program, Fiscal Years 2011/12 through 2015/16, City of Huntington Beach.

CEC2012c- CEC Staff (tn 67433) Huntington Beach Energy Project (HBEP) (12-AFC-02) Staff's Data Requests, 1 through 72 Coastal Commission Data Request. October 2, 2012.

CEC2012d- CEC Staff (tn 68951) Huntington Beach Energy Project (HBEP) (12-AFC-02) Staff's Data Requests, 73 through 98. December 20, 2012.

APPENDIX TT-1: PLUME VELOCITY ANALYSIS

Tao Jiang, Ph.D., P.E.

INTRODUCTION

The following provides the assessment exhaust stack plume vertical velocities of the Huntington Beach Energy Project (HBEP) air cooled condensers (ACC) and gas turbines. Staff completed calculations to determine the worst-case vertical plume velocities at different heights above the stacks based on the applicant's proposed facility design. The purpose of this appendix is to provide documentation of the method used to estimate worst-case vertical plume velocity estimates to assist evaluation of the project's impacts on aviation safety in the vicinity of the proposed facility.

PROJECT DESCRIPTION

HBEP is a proposed 939 megawatt (MW) combined-cycle electrical generating facility, consisting of two power blocks. Each power block is composed of three Mitsubishi Power Systems Americas (MPSA) 501DA combustion turbines and a 15-cell ACC. The other plume sources at the HBEP site, like the existing fire pump diesel engines, were not consider as the plumes are very small.

PLUME VELOCITY CALCULATION METHOD

Staff uses a calculation approach from a technical paper (Best 2003) to estimate the worst-case plume vertical velocities for vertical turbulence from plumes such as the HBEP stacks and cooling system. The calculation approach, which is also known as the "Spillane approach", used by staff is limited to calm wind conditions, which are the worst-case wind conditions. The Spillane approach uses the following equations to determine vertical velocity for single stacks during dead calm wind (i.e., wind speed = 0) conditions:

(1) $(V^*a)^3 = (V^*a)_o^3 + 0.12^*F_o^*[(z-z_v)^2-(6.25D-z_v)^2]$

(2) $(V^*a)_o = V_{exit}^*D/2^*(T_a/T_s)^{0.5}$

(3) $F_o = g^*V_{exit}^*D^2{}^*(1-T_a/T_s)/4$

(4) $Z_v = 6.25D^*[1-(T_a/T_s)^{0.5}]$

Where: V = vertical velocity (m/s), plume-average velocity

a = plume top-hat radius (m, increases at a linear rate of $a = 0.16^*(z- z_v)$)

F_o= initial stack buoyancy flux m^4/s^3

z = height above ground (m)

z_v= virtual source height (m)

V_{exit}= initial stack velocity (m/s)

D = stack diameter (m)

T_a= ambient temperature (K)

T_s= stack temperature (K)

g = acceleration of gravity (9.8 m/s^2)

Equation (1) is solved for V at any given height above ground that is above the momentum rise stage for single stacks (where z > 6.25D) and at the end of the plume merged stage for multiple plumes. This solution provides the plume-average velocity for the area of the plume at a given height above ground; the peak plume velocity would be two times higher than the plume-average velocity predicted by this equation. The stack buoyancy flux (Equation 3) is a prominent part of Equation (1). The calm condition calculation basis clearly represents the worst-case conditions, and the vertical velocity will decrease substantially as wind speed increases.

For multiple stack plumes, where the stacks are equivalent as is the case for HBEP, the multiple stack plume velocity during calm winds is calculated by staff in a simplified fashion, presented in the Best Paper as follows:

(1) $V_m = V_{sp} * N^{0.25}$

Where: V_m = multiple stack combined plume vertical velocity (m/s)
V_{sp} = single plume vertical velocity (m/s), calculated using Equation (1)
N = number of stacks

Staff notes that this simplified multiple stack plume velocity calculation method predicts somewhat lower velocity values than the full Spillane approach methodology for multiple plumes as given in data results presented in the Best paper (Best 2003). However, for a long linear set of plumes, such as the ACC designed for the HBEP project, it is very unlikely that all plumes can merge fully to allow this velocity given the stack separation and the height/atmospheric conditions needed for them to fully merge. Therefore the use of this approach will likely over predict the combined plume velocities in this case.

VERTICAL PLUME VELOCITY ANALYSIS

AIR COOLED CONDENSER DESIGN AND OPERATING PARAMETERS

The applicant provided exhaust data for the different ambient conditions. The design and operating parameter data for the project's ACC are provided in **Plume Velocity Table 1**.

GAS TURBINE/HRSG DESIGN AND OPERATING PARAMETERS

The applicant provided 15 different gas turbine operation scenarios. The design and operating parameter data for the gas turbines stack exhaust under these scenarios are provided in **Plume Velocity Table 2**. Staff conducted a screening analysis of all 15 cases. It was shown that Case 2 was the worst-case velocity conditions, which results in the highest height at which the plume vertical velocity drops to 4.3 m/s.

Plume Velocity Table 1
HBEP ACC Operating and Exhaust Parameters

Parameter	ACC Design Parameters		
	Block 1 ACC		
Number of Cells	15 Cells		
Cell Height (feet)	104		
Cell Stack Diameter (feet)	36		
Stack Exit Velocity (ft/sec)	11.7	13.1	12.7

Parameter	ACC Design Parameters		
Stack Temperature (°F)	86	116.5	167
Ambient Temperature (°F)	32	65.8	110
	Block 2 ACC		
Number of Cells	15 Cells		
Cell Height (feet)	104		
Cell Stack Diameter (feet)	36		
Stack Velocity (ft/sec)	11.4	17.2	16.7
Stack Temperature (°F)	86	104	155
Ambient Temperature (°F)	32	65.8	110

Source: HBEP 2013b

Plume Velocity Table 2
HBEP Gas Turbine Operating and Exhaust Parameters

Case	Ambient Temp (°F)	Stack Height (feet)	Stack Diameter (feet)	Stack Exit Vel (ft/sec)	Stack Temp (°F)
1	32	120	18	79.2	362.7
2	32	120	18	81.9	393.6
3	32	120	18	73.4	387.2
4	32	120	18	64.1	380.7
5	32	120	18	57.5	373.7
6	65.8	120	18	74.2	358
7	65.8	120	18	77.3	388.3
8	65.8	120	18	69.9	380.2
9	65.8	120	18	63.1	374
10	65.8	120	18	54.9	368
11	110	120	18	71.6	358.9
12	110	120	18	74.6	389.3
13	110	120	18	62.5	377.2
14	110	120	18	56.6	373.5
15	110	120	18	50.7	369.7

Source: HBEP 2012a, table 5.1B2

PLUME VELOCITY CALCULATION RESULTS

Using the Spillane calculation approach, the plume average vertical velocity at different heights above ground was determined by staff for calm conditions. Staff's calculated plume average velocity values for the ACC are provided in **Plume Velocity Table 3.** The combined velocities are calculated by combining all 15 cells by assuming all cell plumes have completely merged.

As explained in the **Traffic and Transportation** section, a plume average vertical velocity of 4.3 m/s has been determined by staff to be the critical velocity of concern to light aircraft. This is based on the Australian Civil Aviation Safety Authority (CASA) advisory circular (CASA 2003). Vertical velocities below this level are not of concern to light aircraft. The air cooled condensers exhaust plumes were found to drop below 4.3 m/s at a height between 1000 and 1090 feet above ground depending on operating conditions. See **Plume Velocity Table 4**.

Plume Velocity Table 3
HBEP ACC Vertical Plume Velocities (m/s)

Height Above Ground Level (Feet)	Block 1 ACC			Block 2ACC		
	32°F	**65.8°F**	**110°F**	**32°F**	**65.8°F**	**110°F**
400	5.14	5.21	5.19	5.08	5.58	5.59
500	5.25	5.27	5.26	5.20	5.43	5.48
600	5.07	5.08	5.08	5.03	5.17	5.24
700	4.87	4.87	4.87	4.82	4.93	5.00
800	4.67	4.67	4.67	4.63	4.72	4.78
900	4.50	4.49	4.50	4.46	4.53	4.60
1,000	4.34	4.34	4.34	4.30	4.37	4.44
1,100	4.20	4.20	4.20	4.17	4.23	4.29
1,200	4.08	4.08	4.08	4.05	4.10	4.16
1,300	3.97	3.97	3.97	3.94	3.99	4.05
1,400	3.87	3.87	3.87	3.84	3.88	3.95
1,500	3.78	3.77	3.78	3.75	3.79	3.85
1,600	3.70	3.69	3.69	3.66	3.71	3.77
1,700	3.62	3.61	3.62	3.59	3.63	3.69
1,800	3.55	3.54	3.55	3.52	3.56	3.62
1,900	3.48	3.48	3.48	3.45	3.49	3.55
2,000	3.42	3.42	3.42	3.39	3.43	3.49

Plume Velocity Table 4
Heights of HBEP ACC Vertical Plume Velocities of 4.3m/s

	Block 1 ACC			Block 2 ACC		
	32°F	**65.8°F**	**110°F**	**32°F**	**65.8°F**	**110°F**
Height Above Ground Level (Feet)	1030	1025	1030	1000	1050	1090

Each power block of HBEP has 3 turbines in a linear configuration. When the spacing between the gas turbines is not large enough to prevent plume merging, the exhaust plumes may spread enough to significantly merge prior to the velocity lowering to vertical velocities below levels of concern. Therefore, the gas turbine plume size and vertical velocities for different plume merging scenarios, where the value N is equal to the number of fully merged plumes, were calculated and are presented in **Plume Velocity Table 5.**

Plume Velocity Table 5
HBEP Turbine Plume Size and Vertical Plume Velocities

Height Above Ground Level (Feet)	Plume Diameter (m) [a]	Plume Velocity (m/s) [b]		
		N=1	N=2	N=3
300	14.913	8.78	Not Merged	Not Merged
400	24.667	6.96	Not Merged	Not Merged
500	34.421	6.11	Not Merged	Not Merged
600	44.174	5.57	Not Merged	Not Merged
700	53.928	5.19	Not Merged	Not Merged
800	63.682	4.90	Not Merged	Not Merged
900	73.436	4.66	5.54	Not Merged
1000	83.189	4.47	5.31	Not Merged
1100	92.943	4.30	5.11	Not Merged
1200	102.697	4.16	4.94	Not Merged
1300	112.450	4.03	4.79	Not Merged
1400	122.204	3.92	4.66	Not Merged
1500	131.958	3.82	4.54	Not Merged
1600	141.712	3.73	4.44	Not Merged
1700	151.465	3.65	4.34	4.80
1800	161.219	3.57	4.25	4.70
1900	170.973	3.50	4.16	4.61
2000	180.726	3.44	4.09	4.52
2100	190.480	3.38	4.02	4.44
2200	200.234	3.32	3.95	4.37
2300	209.988	3.27	3.89	4.30
2400	219.741	3.22	3.83	4.24
2500	229.495	3.17	3.77	4.18
2600	239.249	3.13	3.72	4.12
2700	249.002	3.09	3.67	4.06
2800	258.756	3.05	3.63	4.01
2900	268.510	3.01	3.58	3.96
3000	278.264	2.98	3.54	3.92

Notes:
a – The separation between stacks is approximately 36.6 meters for two stacks and 73.2 meters for all stacks and the plumes will begin to merge when the plume diameter is the same as the separation and is assumed to be fully merged when the plume diameter is twice the stack separation.
b – Not Merged means not fully merged.

The values shown in **Plume Velocity Table 5** are worst-case values for Case 2 with dead calm wind conditions from ground level to the height where the plume vertical velocities reach 4.3 m/s. For other operating scenarios and ambient temperatures, the maximum heights for the 4.3 m/s vertical velocities would be somewhat lower and aircraft flying above these heights should not be affected by vertical velocities that are less than 4.3 m/s.

The gas turbine plume average velocity is calculated to drop below 4.3 m/s at a height of approximately 1,100 feet for the single turbine plume (N=1). The plume diameter at this height is around 92.9m, which is larger than the distance of two adjacent turbines (36.6m). Therefore the merging of the adjacent turbine plumes should be considered. In the case of two plumes fully merging (N=2), the average velocity is calculated to drop below 4.3 m/s at the height of 1,740 feet. The most conservative scenario assumes all three plumes would fully merge (i.e., N=3), where plume average velocity is calculated to drop below 4.3 m/s at a height of approximately 2,300 feet. However, it is very unlikely that all three plumes can merge fully to allow this velocity given the stack separation and the height/atmospheric conditions needed for them to fully merge (including dead calm wind conditions for the entire portion of the atmosphere from stack exit up to the point where the vertical velocity drops to 4.3 m/s). Therefore staff proposes, as a reasonable worst case, to use the scenario of two plume merging (N=2), which shows that the average velocity drops below 4.3 m/s at the height of 1,740 feet.

The velocity values listed above in **Plume Velocity Table 3** and **Plume Velocity Table 5** are plume average velocities across the area of the plume. The maximum plume velocity, based on a normal Gaussian distribution, is two times the plume average velocities shown in the table.

WIND SPEED STATISTICS

The operating monitoring station closest to the proposed site is Costa Mesa station, approximately 3.5 miles northeast of the project site. There are no complex terrain features between the monitoring site and the project site. Therefore, wind roses and wind frequency distribution data collected from the Costa Mesa station were considered to be representative for the project site location. The applicant provides the calm wind speed statistics for Costa Mesa from ground-level meteorological data collected for 2005 through 2007. Calm winds for the purposes of the reported monitoring station statistics are those hours with average wind speeds below 1 knot (equal to 0.5 m/s). Calm or very low wind speeds can also occur for shorter periods of time within each of the monitored average hourly conditions. However, the shortest time resolution for the available meteorological data is one hour. The annual wind rose data shows calm/low wind speed conditions averaging an hour or longer is 22.07 percent in the site area.

CONCLUSIONS

The calculated worst case calm wind condition vertical plume average velocities from the HBEP gas turbines and air cooled condensers are both predicted to exceed 4.3 m/s at heights at or above 500 feet above ground level. The air cooled condensers exhausts were found to drop below 4.3 m/s at the height of 1090 feet under worst case conditions. The average velocity of gas turbines plumes drops below 4.3 m/s at the height of 1,740 feet under the reasonable worst case and the scenario of two plumes merging (N=2). There are no other plume sources at the HBEP site.

The vertical velocity from the equipment exhaust at a given height above the stack decreases as wind speed increases. However, the plume average vertical velocities for the gas turbines and air cooled condensers will remain relatively high, and would exceed 4.3 m/s above 500 feet above ground level, during calm or very low wind speed conditions. These low wind speed conditions lasting an hour or more occur reasonably frequently at the site location. Additionally, shorter periods of dead calm winds, lasting long enough to increase the vertical plume average velocity height up to its peak height, can also occur during hours with low average wind speeds.

REFERENCES

Best 2003 –Aviation Safety and Buoyant Plumes. Presented at the Clean Air Conference, Newcastle, New South Wales, Australia. By Peter Best, Lena Jackson, Mark Kanowski of Katestone Environmental, Toowong, Queensland, Australia and Kevin Spillane of Bendigo, Victoria, Australia.

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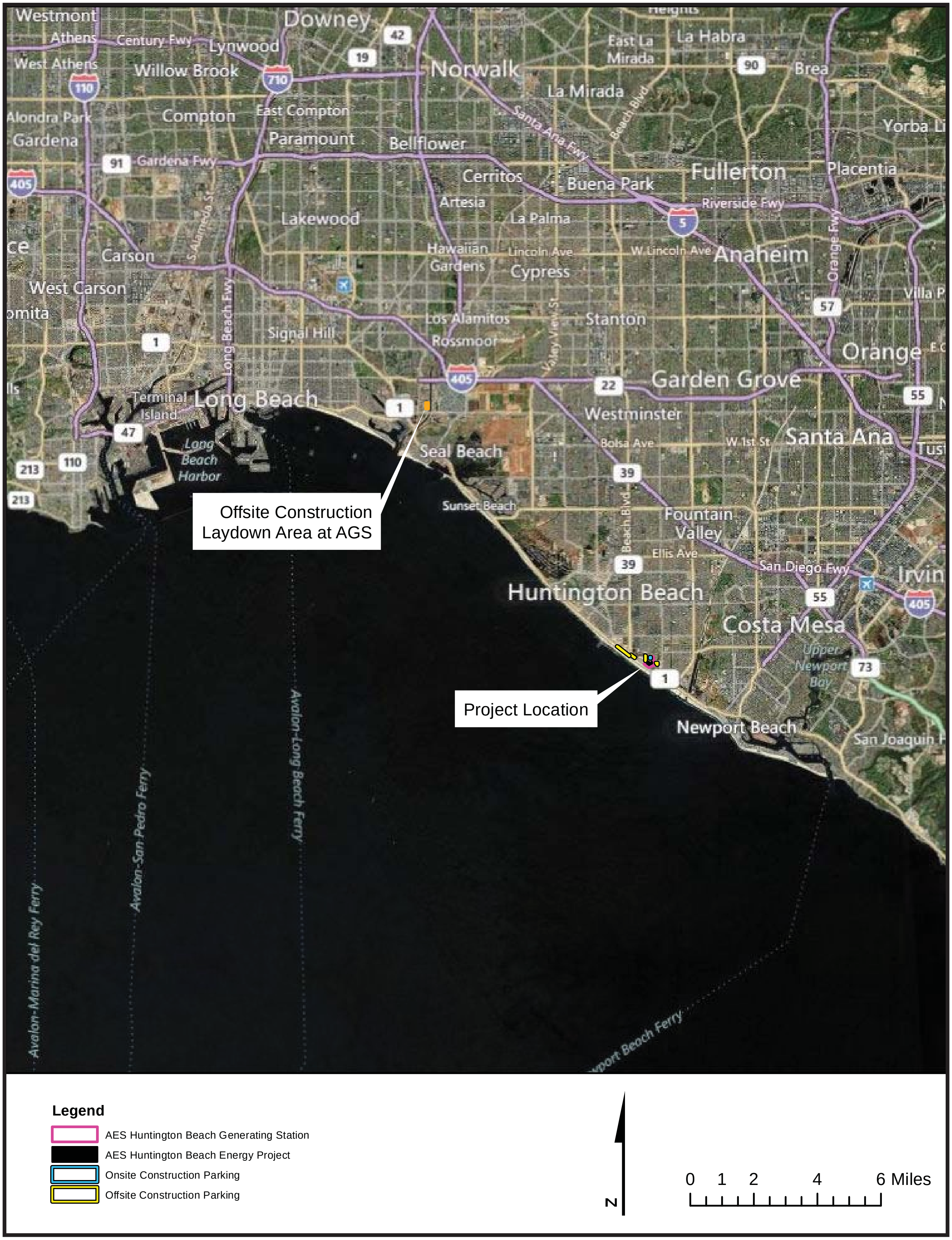
HBEP 2013b – Stoel Rives LLP / Melissa A. Foster (tn 69208). Applicant's Responses to Staff's Data Requests, Set 2 (#73-98), dated 01/22/2013. Submitted to CEC/ Dockets on 01/22/2013.

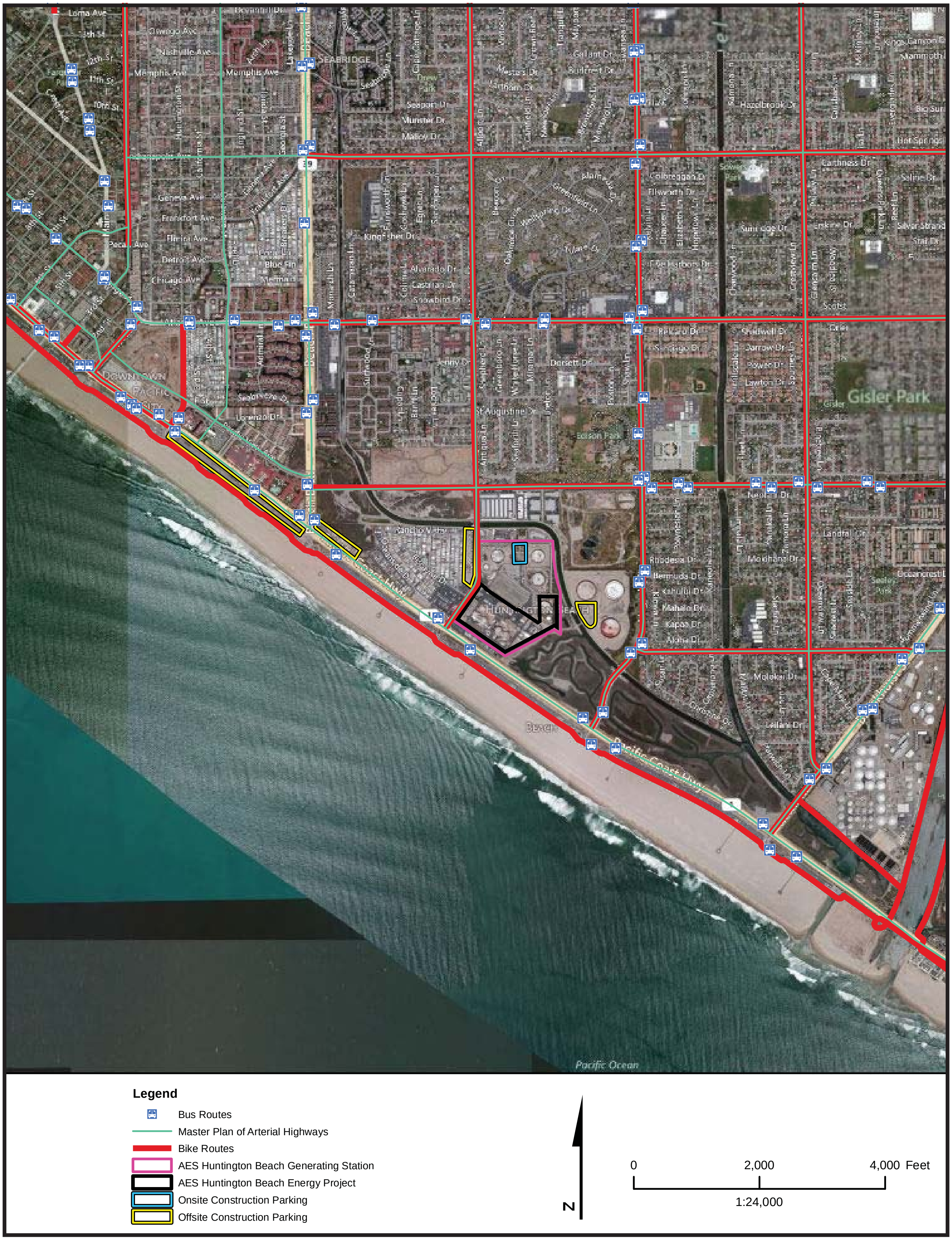
CASA 2003 – Australian Civil Aviation Safety Authority (CASA) advisory circular AC 139-05(0) (http://www.casa.gov.au/newrules/parts/139/download/ac139-005.pdf).

TRAFFIC AND TRANSPORTATION - FIGURE 1
Huntington Beach Energy Project- Regional Transportation Setting



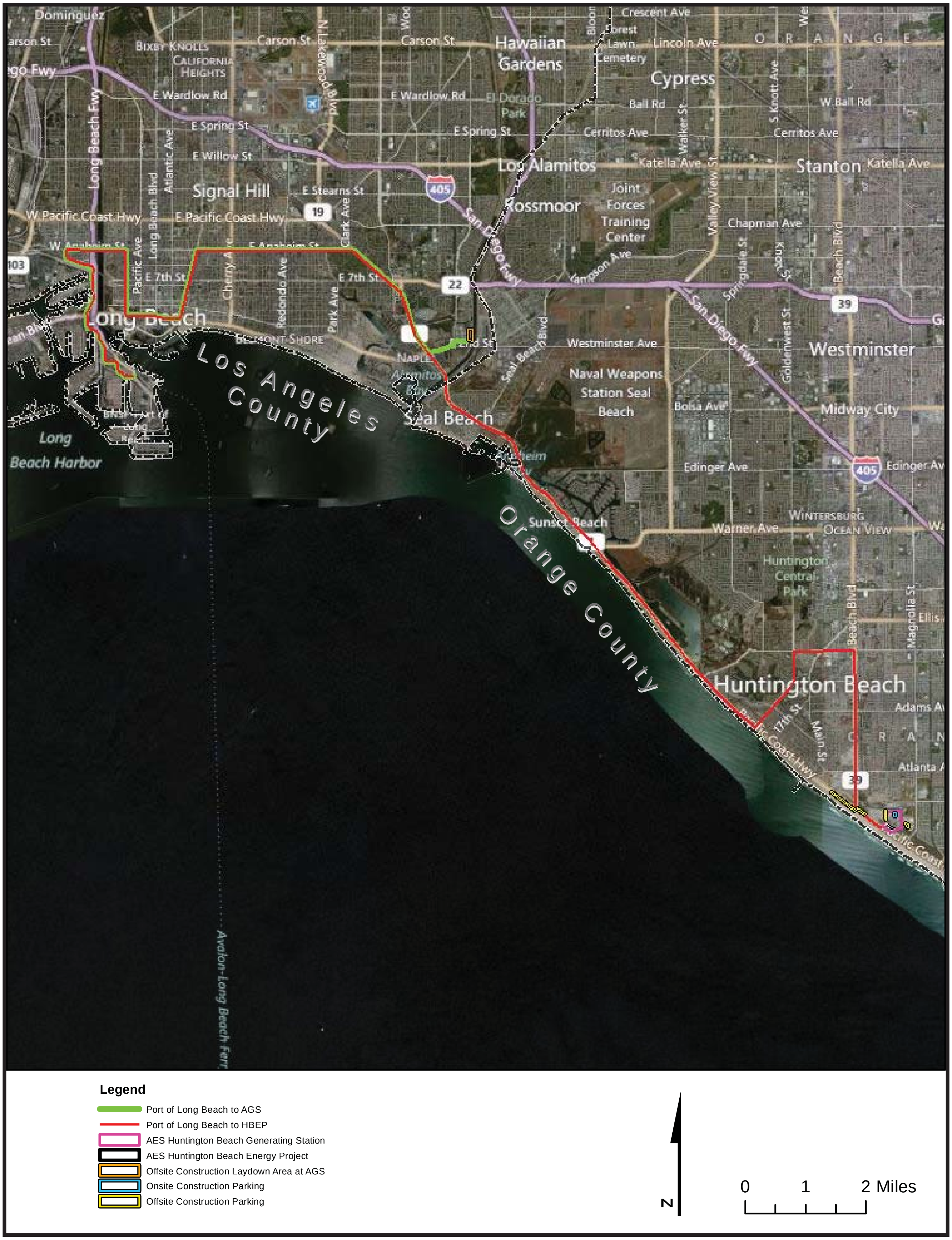
CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: AFC - Figure 5.12 - 1

TRAFFIC AND TRANSPORTATION - FIGURE 2
Huntington Beach Energy Project- Local Transportation Setting



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: AFC - Figure 5.12 - 2

TRAFFIC AND TRANSPORTATION - FIGURE 3
Huntington Beach Energy Project- HBEP Heavy Haul Route



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: AFC - Figure 5.12 - 3

TRAFFIC AND TRANSPORTATION - FIGURE 4

Huntington Beach Energy Project- HBEP Construction Parking Areas

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC - Figure 5.12 - 4

TRANSMISSION LINE SAFETY AND NUISANCE

Obed Odoemelam, Ph.D.

SUMMARY OF CONCLUSIONS

The applicant, AES Southland Development, LLC, proposes to build a new 230-kV line whose two circuits would be used to connect the proposed Huntington Beach Energy Project (HBEP) to Southern California Edison's (SCE's) 230-Kv switchyard located within the site of the existing Huntington Beach Generating Station (HBGS). The proposed line would lie entirely within the boundaries of the HBGS site and no offsite lines would be necessary. Since the proposed 230-kV line would be operated within the SCE service area, it would be designed, constructed, operated, routed, and maintained according to SCE's guidelines for line safety and field management which conform to applicable laws, ordinances, regulations and standards. The proposed lines would lie within the boundaries of an existing, operating power plant that would cease operations once HBEP construction is complete. Since this an existing power plant site and the connecting transmission lines would be short in length with no nearby residences, there would be no potential for the residential electric and magnetic field exposures which have been of some health concern in recent years. With the four proposed Conditions of Certification, any safety and nuisance impacts from construction and operation of the proposed line would be less than significant.

INTRODUCTION

The purpose of this staff analysis is to assess the transmission line design and operational plan for the proposed HBEP project to determine whether its related field and non-field impacts would constitute a significant environmental hazard in the area around the proposed route. All related health and safety laws, ordinances, regulations, and standards (LORS) are currently aimed at minimizing such hazards. Staff's analysis focuses on the following issues taking into account both the physical presence of the line and the physical interactions of its electric and magnetic fields:

- aviation safety;
- interference with radio-frequency communication;
- audible noise;
- fire hazards;
- hazardous shocks;
- nuisance shocks; and
- electric and magnetic field (EMF) exposure.

The federal, state, and local laws and policies in the next section apply to the control of the field and non-field impacts of electric power lines. Staff's analysis examines the project's compliance with these requirements.

METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

The LORS and practices listed in **TLSN Table 1** have been established to maintain impacts below levels of potential environmental significance. Thus, if staff determines that the project would comply with applicable LORS, we would conclude that any transmission line-related safety and nuisance impacts would be less than significant. The nature of these individual impacts is discussed below together with the potential for compliance with the LORS that apply.

Laws, Ordinances, Regulations, and Standards

Transmission Line Safety and Nuisance (TLSN) Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable LORS	Description
Aviation Safety	
Federal	
Title 14, Part 77 of the Code of Federal Regulations (CFR),"Objects Affecting the Navigable Air Space"	Describes the criteria used to determine the need for a Federal Aviation Administration (FAA) "Notice of Proposed Construction or Alteration" in cases of potential obstruction hazards.
FAA Advisory Circular No. 70/7460-1G, "Proposed Construction and/or Alteration of Objects that May Affect the Navigation Space"	Addresses the need to file the "Notice of Proposed Construction or Alteration" (Form 7640) with the FAA in cases of potential for an obstruction hazard.
FAA Advisory Circular 70/7460-1G, "Obstruction Marking and Lighting"	Describes the FAA standards for marking and lighting objects that may pose a navigation hazard as established using the criteria in Title 14, Part 77 of the CFR.
Interference with Radio Frequency Communication	
Federal	
Title 47, CFR, section 15.2524, Federal Communications Commission (FCC)	Prohibits operation of devices that can interfere with radio-frequency communication.
State	
California Public Utilities Commission (CPUC) General Order 52 (GO-52)	Governs the construction and operation of power and communications lines to prevent or mitigate interference.
Audible Noise	
Local	
City of Huntington Beach General Plan.	Identifies and appraises noise problems within the community and assists the City in making land use decisions
City of Huntington Beach Municipal Code.	Establishes performance standards that noise sources should achieve at existing or planned residential or other noise-sensitive land uses.

Applicable LORS	Description
Hazardous and Nuisance Shocks	
State	
CPUC GO-95, “Rules for Overhead Electric Line Construction”	Governs clearance requirements to prevent hazardous shocks, grounding techniques to minimize nuisance shocks, and maintenance and inspection requirements.
Title 8, California Code of Regulations (CCR) section 2700 et seq. “High Voltage Safety Orders”	Specifies requirements and minimum standards for safely installing, operating, working around, and maintaining electrical installations and equipment.
National Electrical Safety Code	Specifies grounding procedures to limit nuisance shocks. Also specifies minimum conductor ground clearances.
Industry Standards	
Institute of Electrical and Electronics Engineers (IEEE) 1119, “IEEE Guide for Fence Safety Clearances in Electric-Supply Stations”	Specifies the guidelines for grounding-related practices within the right-of-way and substations.
Electric and Magnetic Fields	
State	
GO-131-D, CPUC ”Rules for Planning and Construction of Electric Generation Line and Substation Facilities in California”	Specifies application and noticing requirements for new line construction including EMF reduction.
CPUC Decision 93-11-013	Specifies CPUC requirements for reducing power frequency electric and magnetic fields.
Industry Standards	
American National Standards Institute (ANSI/IEEE) 644-1944 Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields from AC Power Lines	Specifies standard procedures for measuring electric and magnetic fields from an operating electric line.
Fire Hazards	
State	
14 CCR sections 1250-1258, “Fire Prevention Standards for Electric Utilities”	Provides specific exemptions from electric pole and tower firebreak and conductor clearance standards and specifies when and where standards apply.

SETTING AND EXISTING CONDITIONS

The proposed project would be located on 28.6 acres in an industrial area of Huntington Beach, California at 21730 Newland Street just north of the intersection of the Pacific Coast Highway (Highway 1) and Newland Street. The proposed transmission line would be entirely within the boundary of the existing Huntington Beach Generating Station, an operating power plant that would cease operations once HBEP construction is complete. HBEP would connect to the regional electric power grid through the existing Southern California (SCE) 230-kilovolt (kV) switchyard located within the site of the existing Huntington Beach Generating Station. The proposed line would consist of the two 230-kV circuits that would connect the two HBEP power blocks to this SCE switchyard. No offsite lines are proposed as part of HBEP.

Since the proposed project's transmission line would be located within the site of an existing power plant without nearby residents, residential exposure to the generated fields would not occur. Such residential exposure has been responsible for the health concern of recent years.

PROJECT DESCRIPTION

The proposed project line consists of the following two generator tie-lines:

- The first generator tie-line connecting HBEP's power block 1 to the existing SCE on-site switchyard; and
- The second generator tie-line connecting HBEP's power block 2 to the same SCE on-site switchyard.

The connector line for power block 1 would be approximately 0.22 miles while the one for power block 2 would be 0.16 miles. Each line would be designed as a combination of single-and/ or double-circle line to be supported on self-supporting steel structures. The lines' conductors would be aluminum steel-supported cables as typical of similar SCE lines. The applicant provided the details of the proposed support structures as related to line safety, maintainability, and field reduction efficiency (HBEP 2012, Figure 3.1-2).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

DIRECT IMPACTS AND MITIGATION

Aviation Safety

For HBEP, any potential hazard to area aircraft would relate to the potential for collision in the navigable airspace. The requirements in the LORS listed on **TLSN Table 1** establish the standards for assessing the potential for obstruction hazards within the navigable space and establish the criteria for determining when to notify the FAA about such hazards. These regulations require FAA notification in cases of structures over 200 feet from the ground, or if the structure were to be less than 200 feet in height but located within the restricted airspace in the approaches to public or military airports. For airports with runways longer than 3,200 feet, the restricted space is defined by the FAA as an area extending 20,000 feet from the runway. For airports with runways of 3,200 feet or less, the restricted airspace would be an area that extends 10,000 feet from this runway. For heliports, the restricted space is an area that extends 5,000 feet.

The nearest public airport to the project site is the John Wayne Airport which is approximately 5.9 miles to the east. The nearest military airport is the Los Alamitos Army Airfield approximately10.5 miles to the north. In addition to these two airports, the applicant has provided a listing of six private or private area heliports together with their respective distances to HBEP (HBEP 2012, pp. 3-9 and 3-10). None of these airports and heliports is close enough for any line-related collision hazards. Therefore, staff does not recommend a condition of certification regarding aviation safety.

Interference with Radio-Frequency Communication

Transmission line-related radio-frequency interference is one of the indirect effects of line operation and is produced by the physical interactions of line electric fields. Such interference is due to the radio noise produced by the action of the electric fields on the surface of the energized conductor. The process involved is known as *corona discharge*, but is referred to as *spark gap electric discharge* when it occurs within gaps between the conductor and insulators or metal fittings. When generated, such noise manifests itself as perceivable interference with radio or television signal reception or interference with other forms of radio communication. Since the level of interference depends on factors such as line voltage, distance from the line to the receiving device, orientation of the antenna, signal level, line configuration and weather conditions, maximum interference levels are not specified as design criteria for modern transmission lines. The level of any such interference usually depends on the magnitude of the electric fields involved and the distance from the line. The potential for such impacts is therefore minimized by reducing the line electric fields and locating the line away from inhabited areas.

The HBEP line would be built and maintained according to standard practices that minimize surface irregularities and discontinuities. Moreover, the potential for such corona-related interference is usually of concern for lines of 345 kV and above, and not for 230-kV lines such as the proposed line. The proposed low-corona designs are used for SCE lines of similar voltage rating to reduce surface electric field gradients and the related potential for corona effects. Since the proposed lines would be located within an existing power plant with no nearby residents, staff does not expect any corona-related radio-frequency interference or complaints and does not recommend any related condition of certification.

Audible Noise

The noise-reducing designs related to electric field intensity are not specifically mandated by federal or state regulations in terms of specific noise limits. As with radio noise, such audible noise is limited instead through design, construction, or maintenance practices established from industry research and experience as effective without significant impacts on line safety, efficiency, maintainability, and reliability. As with radio noise, audible noise usually results from the action of the electric field at the surface of the line conductor and could be perceived as a characteristic crackling, frying, or hissing sound or hum, especially in wet weather. Since the noise level depends on the strength of the line's electric field, the potential for perception can be assessed from estimates of the field strengths expected during operation. Such noise is usually generated during rainfall, but mainly from overhead lines of 345 kV or higher. It is, therefore, not generally expected at significant levels from lines of less than 345 kV as proposed for HBEP. Research by the Electric Power Research Institute (EPRI 1982) has validated this by showing the fair-weather audible noise from modern transmission lines to be generally indistinguishable from background noise at the edge of a right-of-way of 100 feet or more. The proposed line right-of-way would fall entirely within the boundaries of an existing power plant with similar connecting lines (HBEP 2012, p. 3-9). Since the low-corona designs are also aimed at minimizing field strengths, staff does not expect the proposed line operation to add significantly to current background noise levels in the project area. For an assessment of the noise from the proposed project and related facilities, please refer to staff's analysis in the **Noise and Vibration** section.

Fire Hazards

The fire hazards addressed through the related LORS in **TLSN Table 1** are those that could be caused by sparks from conductors of overhead lines, or that could result from direct contact between the line and nearby trees and other combustible objects.

The requirements of the existing SCE fire prevention and suppression program would be implemented for the proposed project line (HBEP 2012, p. 3-10). The applicant's intention to ensure compliance with the clearance-related aspects of GO-95 would be an important part of this mitigation approach. Condition of Certification **TLSN-3** is recommended to ensure compliance with these program requirements.

Hazardous Shocks

Hazardous shocks are those that could result from direct or indirect contact between an individual and the energized line, whether overhead or underground. Such shocks are capable of serious physiological harm or death and remain a driving force in the design and operation of transmission and other high-voltage lines.

No design-specific federal regulations have been established to prevent hazardous shocks from overhead power lines. Safety is assured within the industry from compliance with the requirements specifying the minimum national safe operating clearances applicable in areas where the line might be accessible to the public.

Implement the GO-95-related measures against direct contact with the energized line (HBEP 2012, pp.3-7 through 3-10) would serve to minimize the risk of hazardous shocks. Staff's recommended Condition of Certification **TLSN-1** would be adequate to ensure implementation of the necessary mitigation measures.

Nuisance Shocks

Nuisance shocks are caused by current flow at levels generally incapable of causing significant physiological harm. They result mostly from direct contact with metal objects electrically charged by fields from the energized line. Such electric charges are induced in different ways by the line's electric and magnetic fields.

There are no design-specific federal or state regulations to limit nuisance shocks in the transmission line environment. For modern overhead high-voltage lines, such shocks are effectively minimized through grounding procedures specified in the National Electrical Safety Code (NESC) and the joint guidelines of the American National Standards Institute (ANSI) and the Institute of Electrical and Electronics Engineers (IEEE). For the proposed project line, the project owner will be responsible in all cases for ensuring compliance with these grounding-related practices within the right-of-way.

The potential for nuisance shocks around the proposed line would be minimized through standard industry grounding practices (HBEP 2012, p. 3-9). Staff recommends Condition of Certification **TLSN-4** to ensure such grounding for HBEP.

Electric and Magnetic Field Exposure

The possibility of deleterious health effects from EMF exposure has increased public concern in recent years about living near high-voltage lines. Both electric and magnetic fields occur together whenever electricity flows, and exposure to them together is generally referred to as *EMF exposure*. The available evidence as evaluated by the CPUC, other regulatory agencies, and staff has not established that such fields pose a significant health hazard to exposed humans. There are no health-based federal regulations or industry codes specifying environmental limits on the strengths of fields from power lines. Most regulatory agencies believe, as staff does, that health-based limits are inappropriate at this time. They also believe that the present knowledge of the issue does not justify any retrofit of existing lines.

Staff considers it important, as does the CPUC, to note that while such a hazard has not been established from the available evidence, the same evidence does not serve as proof of a definite lack of a hazard. Staff therefore considers it appropriate, in light of present uncertainty, to recommend feasible reduction of such fields without affecting safety, efficiency, reliability, and maintainability.

While there is considerable uncertainty about EMF health effects, the following facts have been established from the available information and have been used to establish existing policies:

- Any exposure-related health risk to the exposed individual will likely be small.
- The most biologically significant types of exposures have not been established.
- Most health concerns are about the magnetic field.
- There are measures that can be employed for field reduction, but they can affect line safety, reliability, efficiency, and maintainability, depending on the type and extent of such measures.

State's Approach to Regulating Field Exposures

In California, the CPUC (which regulates the installation and operation of many high-voltage lines owned and operated by investor-owned utilities) has determined that only no-cost or low-cost measures are presently justified in any effort to reduce power line fields beyond levels existing before the present health concern arose. The CPUC has further determined that such reduction should be made only in connection with new or modified lines. It requires each utility within its jurisdiction to establish EMF-reducing measures and incorporate such measures into the designs for all new or upgraded power lines and related facilities within their respective service areas. The CPUC further established specific limits on the resources to be used in each case for field reduction. Such limitations were intended by the CPUC to apply to the cost of any redesign to reduce field strength or relocation to reduce exposure. Publicly owned utilities, which are not within the jurisdiction of the CPUC, voluntarily comply with these CPUC requirements. This CPUC policy resulted from assessments made to implement CPUC Decision 93-11-013.

The CPUC has revisited the EMF management issue to assess the need for policy changes to reflect the available information on possible health impacts. The findings specified in Decision D.06-1-42 of January 2006, did not point to a need for significant changes to existing field management policies. Since there are no residences in the immediate vicinity of the proposed project's transmission lines, there would not be the long-term residential EMF exposures mostly responsible for the health concern of recent years. The only project-related EMF exposures of potential significance would be the short-term exposures of plant workers, regulatory inspectors, maintenance personnel, visitors, or individuals in the vicinity of the line. These types of exposures are short term and well understood as not significantly related to the health concern.

In keeping with this CPUC policy, staff requires a showing that each proposed overhead line would be designed according to the safety and EMF-reducing design guidelines applicable to the utility service area involved. These field-reducing measures can impact line operation if applied without appropriate regard for environmental and other local factors bearing on safety, reliability, efficiency, and maintainability. Therefore, it is up to each applicant to ensure that such measures are applied in ways that prevent significant impacts on line operation and safety. The extent of such applications would be reflected by ground-level field strengths as measured during operation. When estimated or measured for lines of similar voltage and current-carrying capacity, such field strength values can be used by staff and other regulatory agencies to assess the effectiveness of the applied reduction measures. These field strengths can be estimated for any given design using established procedures. Estimates are specified for a height of one meter above the ground, in units of kilovolts per meter (kV/m), for the electric field, and milligauss (mG) for the companion magnetic field. Their magnitude depends on line voltage (in the case of electric fields), the geometry of the support structures, degree of cancellation from nearby conductors, distance between conductors, and, in the case of magnetic fields, amount of current in the line.

Since the CPUC currently requires that most new lines in California be designed to according to safety and the EMF-reducing guidelines of the electric utility in the service area involved, their fields are required under this CPUC policy to be similar to fields from similar lines in that service area. Designing the proposed project line according to existing SCE field strength-reducing guidelines would constitute compliance with the CPUC requirements for line field management.

Industry's and Applicant's Approach to Reducing Field Exposures

The present focus is on the magnetic field because unlike electric fields, it can penetrate the soil, buildings, and other materials to produce the types of human exposures at the root of the health concern of recent years. The industry seeks to reduce exposure, not by setting specific exposure limits, but through design guidelines that minimize exposure in each given case. As one focuses on the strong magnetic fields from the more visible high-voltage power lines, staff considers it important, for perspective, to note that an individual in a home could be exposed to much stronger fields while using some common household appliances than from high-voltage lines (National Institute of Environmental Health Services and the U.S. Department of Energy, 1998). The difference between these types of field exposures is that the higher-level, appliance-related exposures are short term, while the exposures from power lines are lower level, but long term. Scientists have not established which of these types of exposures would be more biologically meaningful in the individual. Staff notes such exposure differences only to show that high-level magnetic field exposures regularly occur in areas other than around high-voltage power lines.

As with similar SCE lines, specific field strength-reducing measures would be incorporated into the proposed line design to ensure the field strength minimization currently required by the CPUC in light of the concern over EMF exposure and health.

The field reduction measures that could be applied include the following:

1. Increasing the distance between the conductors and the ground to an optimal level;
2. Reducing the spacing between the conductors to an optimal level;
3. Minimizing the current in the line; and
4. Arranging current flow to maximize the cancellation effects from interacting of conductor fields.

Since the route of the proposed project's transmission line would have no nearby residences, the long-term residential field exposures at the root of the health concern of recent years would not be a significant concern. The field strengths of most significance in this regard would be as encountered within the boundaries of the existing Huntington Beach Generating Station. These field intensities would depend on the effectiveness of the applied field-reducing measures. The applicant calculated the maximum electric and magnetic field intensities expected when the two proposed line circuits are energized (HBEP 2012, p. 3-8). The maximum electric field strength was calculated as 0.51 kV/m directly underneath and 0.015 kV/m at the edge of the HEBP boundary while the maximum operational magnetic field strength was calculated as 32.4 mG underneath the lines and 1.0 mG at the edge of the HEBP site boundary. Staff has verified the accuracy of the modeling approach used in the applicant's calculations regarding parameters bearing on field strength dissipation and exposure assessment. These field strength values are similar to those of similar SCE lines (as required under current CPUC regulations) but, in the case of the magnetic field, the estimate is much less than the 150- 250 mG currently specified by the few states with regulatory limits. The requirements in Condition of Certification **TLSN-2** for field strength measurements are intended to assess the applicant's assumed field reduction efficiency.

CUMULATIVE IMPACTS

Operating any given project may lead to significant adverse cumulative impacts when its effects are considered cumulatively considerable. "Cumulatively considerable" means in this context that the incremental field and non-field effects of an individual project would be significant when considered together with the effects of past, existing, and future projects (California Code Regulation, Title 14, section 15130). When field intensities are measured or calculated for a specific location, they reflect the interactive, and therefore, cumulative effects of fields from all contributing conductors. This interaction could be additive or subtractive depending on prevailing conditions. For the proposed project's transmission lines, this interaction would occur between the HBEP-related fields and the fields from nearby SCE lines. Since the proposed project's transmission lines would be designed, built, and operated according to applicable field-reducing SCE guidelines (as currently required by the CPUC for effective field management), any contribution to cumulative area exposures should be at levels expected for SCE lines of similar voltage and current-carrying capacity and not considered environmentally significant in the present health risk-based regulatory scheme. The actual field strengths and contribution levels for the proposed line design would be assessed from the results of the field strength measurements specified in Condition of Certification **TLSN-2**.

COMPLIANCE WITH LORS

As previously noted, current health-risk-driven CPUC policy on EMF management requires that any high-voltage line within a given area be designed to incorporate the field strength-reducing guidelines of the main area utility lines to be interconnected. The utility in the case of HBEP is SCE. Since the proposed project's 230-kV lines would be designed according to the respective requirements of the LORS listed in **TLSN Table 1**, and operated and maintained according to current SCE guidelines on line safety and field strength management, staff considers the proposed design and operational plan to be in compliance with the health and safety requirements of concern in this analysis. The actual contribution to the area's field exposure levels would be assessed for the proposed route from results of the field strength measurements required in Condition of Certification **TLSN-2**.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

To date, staff received no public or agency comments on the transmission line nuisance and safety aspects of the proposed HBEP and will reply to any such comments received in the Final Staff Assessment (FSA) document for the project.

NOTEWORTHY PUBLIC BENEFITS

Since the proposed tie-in lines would pose specific, although insignificant risks of the field and nonfield effects of concern in this analysis, their building and operation would not yield any public benefits regarding the effort to minimize any human risks from these impacts.

FACILITY CLOSURE

If the proposed HBEP were to be closed and decommissioned, and all related structures are removed as described in the **Project Description** section, the minimal electric shocks and fire hazards from the physical presence of this tie-in line would be eliminated. Decommissioning and removal would also eliminate the transmission lines' field and non-field impacts assessed in this analysis in terms of nuisance shocks, radio-frequency impacts, audible noise, and electric and magnetic field exposure, and aviation safety. Since the lines would be designed and operated according existing SCE guidelines, these impacts would be as expected for SCE lines of the same voltage and current-carrying capacity and therefore, at levels reflecting compliance with existing health and safety LORS.

PROPOSED CONDITIONS OF CERTIFICATION

TLSN-1 The project owner shall construct the proposed 230-kV transmission line according to the requirements of California Public Utility Commission's GO-95, GO-52, GO-131-D, Title 8, and Group 2, High Voltage Electrical Safety Orders, sections 2700 through 2974 of the California Code of Regulations, and Pacific Gas and Electric's EMF reduction guidelines.

Verification: At least 30 days prior to start of construction of the transmission line or related structures and facilities, the project owner shall submit to the Compliance Project Manager (CPM) a letter signed by a California registered electrical engineer affirming that the lines will be constructed according to the requirements stated in the condition.

TLSN-2 The project owner shall use a qualified individual to measure the strengths of the electric and magnetic fields from the line at the points of maximum intensity at the edge of the right-of-way as reflected in the estimates provided by the applicant. The measurements shall be made before and after energization according to the American National Standard Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) standard procedures. These measurements shall be completed no later than six months after the start of operations.

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

TLSN-3 The project owner shall ensure that the route of the proposed transmission line is kept free of combustible material, as required under the provisions of section 4292 of the Public Resources Code and section 1250 of Title 14 of the California Code of Regulations.

Verification: During the first five (5) years of plant operation, the project owner shall provide a summary of inspection results and any fire prevention activities carried out along the proposed route and provide such summaries in the Annual Compliance Report on transmission line safety and nuisance-related requirements.

TLSN-4 The project owner shall ensure that all permanent metallic objects within the proposed route are grounded according to industry standards.

Verification: At least 30 days before the lines are energized, the project owner shall transmit to the CPM a letter confirming compliance with this condition.

CONCLUSIONS

Since staff does not expect the proposed 230-kV transmission tie-in lines to pose an aviation hazard according to current FAA criteria, we do not consider it necessary to recommend specific location changes on the basis of a potential hazard to area aviation.

The potential for nuisance shocks would be minimized through grounding and other field-reducing measures that would be implemented in keeping with current SCE guidelines (reflecting standard industry practices). These field-reducing measures would maintain the generated fields within levels not associated with radio-frequency interference or audible noise.

The potential for hazardous shocks would be minimized through compliance with the height and clearance requirements of CPUC's General Order 95. Compliance with Title 14, California Code of Regulations, Section 1250, would minimize fire hazards while the use of low-corona line design, together with appropriate corona-minimizing construction practices, would minimize the potential for corona noise and its related interference with radio-frequency communication in the area around the route.

Since electric or magnetic field health effects have neither been established nor ruled out for the proposed HBEP and similar transmission lines, the public health significance of any related field exposures cannot be characterized with certainty. The only conclusion to be reached with certainty is that the proposed line design and operational plan would be adequate to ensure that the generated electric and magnetic fields are managed to an extent the CPUC considers appropriate in light of the available health effects information. The long-term, mostly residential, magnetic exposure of health concern in recent years would be insignificant for the proposed lines given the absence of residences along the proposed route. On-site worker or public exposure would be short term and at levels expected for SCE lines of similar design and current-carrying capacity. Such exposure is well understood and has not been established as posing a significant human health hazard.

Since the proposed project's lines would be operated to minimize the health, safety, and nuisance impacts of concern to staff and would be routed within an area with no nearby residences, staff considers the proposed design, maintenance, and construction plan as complying with the applicable LORS. With implementation of the four recommended conditions of certification, any such impacts would be less than significant along the route.

REFERENCES

EPRI — Electric Power Research Institute 1982. Transmission Line Reference Book: 345 kV and Above.

HBEP 2012a – AES Southland Development, LLC / Stephen O’Kane (tn 66003). A*pplication for Certification (AFC), Volume I & II, dated, June 27, 2012*. Submitted to CEC/ Dockets on 06/27/2012.

National Institute of Environmental Health Services 1998. *An Assessment of the Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields*. A Working Group Report. August 1998.

VISUAL RESOURCES

Jeanine Hinde

SUMMARY OF CONCLUSIONS

The existing electrical power plant site (Huntington Beach Generating Station [HBGS]) would be used for construction and operation of the proposed Huntington Beach Energy Project (HBEP). Compared to other development in the surrounding area, the HBGS and the Southern California Edison (SCE) switchyard transmission structures are the most visually prominent, built features in the project area.

Critical off-site viewpoints, referred to as key observation points (KOPs), were selected to represent primary viewer groups and sensitive viewing locations in a defined area surrounding the project site where visual impacts could occur. For the proposed HBEP, seven KOPs were evaluated by Energy Commission staff (staff). Staff has identified significant visual resources impacts at KOP 4 and KOP 5. Visual impacts for the other KOPs are considered less than significant.

Staff evaluated the potential effects of the long-term schedule for the proposed demolition of HBGS structures and construction of the HBEP. Staff concludes that demolition, construction, and commissioning activities would substantially degrade the existing visual character and quality of the site and its surroundings. Staff proposes Condition of Certification **VIS-1** requiring preparation and implementation of a Construction Screening and Site Restoration Plan to reduce this impact to less than significant.

Staff analyzed the potential for lighting of the project site and structures during demolition, construction, commissioning, and operation to create new sources of substantial light or glare. Staff concludes that project lighting could adversely affect daytime and nighttime views in the area and that potential glint and glare impacts would be significant. Staff proposes implementing Conditions of Certification **VIS-2**, **VIS-3**, and **VIS-4** to reduce the effects of lighting on visual resources to less than significant. The potential for glare from project structures to adversely affect daytime views in the project area is considered a significant impact of the HBEP. Condition of Certification **VIS-5** is proposed to require preparation and implementation of a Surface Treatment Plan to reduce the effects of glare from project surfaces to less than significant.

The project site is in the state's Coastal Zone. Section 30251 of the California Coastal Act requires that the scenic and visual qualities of coastal areas be considered and protected as resources of public importance. Permitted development must be sited and designed to restore and enhance visual quality in visually degraded areas where feasible. Although the applicant and the City of Huntington Beach (City) are investigating visual screening concepts for the HBEP, as of publication of this preliminary staff assessment (PSA), the applicant has not yet proposed any specific, detailed, or enforceable measures to restore and enhance visual quality at the project site. Without a visual screening and enhancement plan, staff has insufficient information to assess consistency of the proposed project with many laws, ordinances, regulations, and standards (LORS) requiring visual enhancement and screening of development in the Coastal Zone. Assuming a visual screening plan for the HBEP will be developed and made available to staff, the final staff assessment (FSA) will assess whether such a plan would achieve compliance with applicable LORS. A conceptual visual screening plan would also be necessary to determine the extent to which significant visual resources impacts could be reduced for KOP 4 and KOP 5.

INTRODUCTION

This section describes existing visual resources conditions in the vicinity of the proposed HBEP and assesses changes to those conditions that would occur from construction and operation of the proposed project.

Staff visited the project site in December 2012 and surveyed existing visual resources in the project area. The descriptions of visual resources in this analysis are based on staff's direct observations, proposed project materials and data prepared by the applicant and submitted to the Energy Commission in 2012 and 2013, and other information and planning documents addressing visual resource conditions and issues in the project area.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

LORS pertaining to aesthetics and protection of sensitive visual resources are summarized below. Further details on applicable LORS and analyses of the proposed project's consistency with specific policies and ordinances are discussed below under "Compliance with Laws, Ordinances, Regulations, and Standards." No federal LORS pertaining to visual resources are applicable to the proposed HBEP.

STATE

California Coastal Act of 1976

The California Coastal Commission (Coastal Commission) was established by voter initiative in 1972 and later made permanent by the California State Legislature through adoption of the California Coastal Act of 1976 (Coastal Act) (Pub. Resources Code § 30000 et seq.). The Coastal Act includes policies addressing many environmental and land use management issues and defines the Coastal Zone boundary where those policies apply. Section 30001.5 of the Coastal Act includes a declaration to "protect, maintain, and where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and artificial resources." Section 30251 of the Coastal Act requires that the scenic and visual qualities of coastal areas be considered and protected as resources of public importance.

Implementation of Coastal Act policies is accomplished primarily through preparation of local coastal programs (LCPs) by local municipalities that are located wholly or partly in the Coastal Zone; Huntington Beach is a shoreline community, a portion of which is in the state's Coastal Zone. Coastal Act policies are the standards by which the Coastal Commission evaluates the adequacy of an LCP. An LCP includes a land use plan (LUP), which may be the relevant portion of the local general plan, including any maps necessary to administer the plan; and zoning ordinances, zoning district maps, and other legal instruments necessary to implement the LUP (Coastal Commission 2012).

The Coastal Element of the City of Huntington Beach General Plan (General Plan) was prepared to "meet the requirements of the Coastal Act and guide civic decisions regarding growth, development, enhancement and preservation of the City's Coastal Zone and its resources." The Coastal Element of the General Plan was initially certified by the Coastal Commission in 2001. A comprehensive update to the Coastal Element was completed by the City in 2011 to ensure consistency with the policies and format of the 1996 General Plan (City of Huntington Beach 2011).

LOCAL

City of Huntington Beach General Plan

Applicable goals, objectives, and policies in the General Plan include those pertaining to visual and aesthetic resources in general, development in areas designated as Public, and development in the Coastal Zone. The City prepared the Coastal Element of its General Plan to guide development for its portion of the Coastal Zone. The General Plan Land Use Element, Urban Design Element, Circulation Element, Utilities Element, and Environmental Resources / Conservation Element also contain goals, objectives, and policies that are potentially applicable to the proposed project.

Zoning and Subdivision Ordinance of the City of Huntington Beach

The purpose of the City's Zoning and Subdivision Ordinance (HBZSO) is to implement the policies of the General Plan. Titles 20–25 constitute the LCP Implementation Plan, which implements the policies of the City's certified LUP (Coastal Element) and the public access and recreation policies of the Coastal Act (HBZSO § 201.06). Titles 21, 22, 23, and 24 contain development and design standards that are applicable to preserving and enhancing public visual resources.

SETTING

PROJECT AREA CHARACTERISTICS

The project area is characterized by broad sandy beaches, low bluffs and mesas, and lowland areas. A sequence of mesas and bays provide the most notable diversity in local landforms in Huntington Beach, including the Huntington Beach Mesa. When viewed from the coast, the bluffs partially mask urban development in the northern coastal area of the county. Conversely, broad views of the Pacific Ocean coastline are possible from the bluffs of the Huntington Beach and Bolsa Chica mesas and portions of the Pacific Coast Highway (PCH).

The existing HBGS is situated on a gently sloping coastal plain with a site elevation of approximately 10 to 14 feet above mean sea level (msl). The project site is over a mile south of the southern edge of the Huntington Beach Mesa. The ridgeline of the hills beyond San Pedro to the northwest and the Santa Ana Mountains to the southeast are visible in background views from the project area. The site is entirely within the Coastal Zone.

The HBGS is in an area of existing and former energy and utility facilities and warehouse-commercial development that is surrounded to the west, north, and east by residential neighborhoods and open space and recreational uses. The closed Ascon Landfill site is northeast of the HBGS site. The area on the north side of the HBGS includes the SCE 230-kilovolt (kV) switchyard and three above-ground, decommissioned fuel oil storage tanks. The Huntington Beach Wetlands Conservancy (Conservancy) owns and operates the Wetlands & Wildlife Care Center along the southwest side of the HBGS site; the Conservancy facilities include an interpretive and education center and a regional wildlife care facility on a slim property between the power plant site and the PCH. The "Huntington By-The-Sea Mobile Estates and RV Park" on Newland Street borders the west side of the HBGS site between the power plant site and the PCH. Huntington State Beach and its public facilities and parking lots border the ocean side of the PCH.

The Conservancy manages Magnolia Marsh along the southeast border of the HBGS, which is one of four areas of wetlands making up the Huntington Beach Wetlands complex. Magnolia Marsh is designated as the Conservancy's primary area for interpretive trail use and ecotourism. Visitors to the marsh use the observation deck at the southwest corner of the marsh and a pathway along the HBGS fence line to Upper Magnolia Marsh.

PROJECT SITE CHARACTERISTICS

The existing HBGS site would be used for construction and operation of the proposed HBEP. The two HBGS 214-foot-tall boiler exhaust stacks and the generating units behind the stacks are roughly 800 feet from the beach. Compared to other development in the surrounding area, including the relatively low-profile, decommissioned fuel oil storage tanks, the HBGS and the SCE switchyard transmission structures are the most visually prominent, built features in the project area.

Parts of the existing HBGS site are landscaped with trees and shrubs based on the approved landscape plan for the 2000 Huntington Beach Generating Station Retool Project (00-AFC-13) (Energy Commission 2004). The planting plan shows landscaped areas along the northwest and southwest borders of the site. Species of trees and shrubs on the plan include Norfolk Island pine (*Araucaria heterophylla*), New Zealand Christmas tree (*Metrosideros excelsa*), maritime pine (*Pinus pinaster*), and tree mallow (*Lavatera assurgentiflora*). An 8-foot masonry wall fronted by street trees was installed along the site border on Newland Street, as depicted on the landscape plan. The landscape trees at the project site have grown tall enough to visually screen the lowest portions of some of the power plant structures for views along Newland Street, the PCH, and Huntington State Beach. The approved landscape plan shows existing groves of an ornamental evergreen shrub called myoporum (*Myoporum laetum*), which can grow to form dense stands. Myoporum shrubs are planted on the northwest, southwest, and southeast borders of the power plant site.

The main entrance to the HBGS site on Newland Street is landscaped with shrubs and flowers and small areas of turf.

The applicant describes existing lighting of the HBGS structures as substantial, including exterior lighting on the stack platforms, scaffolding on the power block exteriors, and exterior staircases (AES Southland Development 2012a). The tops of the existing exhaust stacks are lit with red aircraft safety warning beacons.

The existing HBGS generates steam to produce electricity, and the technology and operational characteristics produce visually prominent water vapor plumes from the HBGS exhaust stack for Units 1 and 2. Based on staff's site visit and review of photographs of the power plant, a large, visible plume emanates from the exhaust stack in varying weather conditions. Water vapor plumes form more frequently and are most visible during daytime hours in the winter when the sky is relatively clear. Highly visible water vapor plumes from the power plant slightly increase the industrial character and appearance of the site.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

THRESHOLDS FOR DETERMINING SIGNIFICANCE

The California Environmental Quality Act (CEQA) provides a series of broad policy statements addressing environmental protection, including the requirement to: "Take all action necessary to provide the people of this state with clean air and water, enjoyment of *aesthetic, natural, scenic,* [emphasis added] and historic environmental qualities…" (Pub. Resources Code § 21001 [b]).

Staff uses the environmental checklist in the "Aesthetics" section of Appendix G of the California Environmental Quality Act Guidelines (State CEQA Guidelines) and professional practices for visual resource assessments to evaluate the potential effects of a project on visual resources. From the State CEQA Guidelines, an impact on visual resources is considered significant if the project would:

- have a substantial adverse effect on a scenic vista;
- substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway;
- substantially degrade the existing visual character or quality of the site and its surroundings, or;
- create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.

The thresholds for determining impacts on visual resources are generally based on these significance criteria. The section, “Direct and Indirect Impacts and Mitigation Measures,” (below) includes a complete analysis of impacts from the proposed project.

Vista is sometimes defined as a distant view through or along an avenue or opening. For this visual resources analysis, scenic vista is further defined as a view that includes remarkable or memorable scenery or a view of a natural or cultural feature that is indigenous to the area. The proposed HBEP would be constructed in a mostly developed area of the Southern California coastline. Magnolia Marsh is part of a complex of restored wetland areas providing views of undeveloped open space along the southeast side of the HBEP site. Uninterrupted views of the Pacific Ocean are possible from Huntington State Beach. However, most landside views in the vicinity of the existing HBGS include built elements typical of coastal development in similar urbanized areas near the coast. No particular view in the project vicinity has a level of scenic appeal that could distinguish it as a scenic vista. Because the HBEP would have no impact on a scenic vista, no further analysis of the project relating to this criterion is necessary.

The PCH (State Route 1) borders the southwest side of the HBEP and is part of a much longer segment of the highway extending north and south of the proposed HBEP site. Segments of the PCH in Ventura, Los Angeles, and Orange counties are on the list of eligible state scenic highways, as shown on the California Scenic Highway Program website (California Department of Transportation 2012). The PCH is not an officially designated state scenic highway in the region; therefore, no further analysis of the project relating to this criterion is necessary.

The General Plan designates the segment of the PCH through its planning area as a major urban scenic corridor. The Circulation Element of the General Plan includes policies on maintaining and enhancing the visual quality and scenic views along designated scenic corridors (City of Huntington Beach 1996a). The analysis below under, “Compliance with Laws, Ordinances, Regulations, and Standards,” discusses the proposed project’s consistency with applicable policies, including those addressing protection of scenic corridors and entry nodes under the City’s General Plan.

ANALYSIS METHOD

The method for this assessment of impacts on visual resources is primarily adapted from guidelines used by the U.S. Forest Service, U.S. Bureau of Land Management, and U.S. Department of Transportation. These guidelines are useful and meaningful for assessing the potential impacts of projects in various environmental settings, including the setting for the proposed HBEP.

The process to evaluate potential impacts on visual resources from construction and operation of the HBEP involved these general steps:

- Define the visual environment, or visual sphere of influence (VSOI), within which visual impacts could occur. As stated in the Application for Certification (AFC), the VSOI may be refined based on computer *viewshed* analysis and mapping.

- Describe sensitive viewpoints and the process to select key observation points, or critical viewpoints, within the VSOI for the project.
- Evaluate the potential effects of the project on visual resources based on the estimated visual sensitivity of the viewing public, the probability that the project site and area would demonstrate a noticeable visual impact with project implementation, and the estimated magnitude of the visual change that would occur with project construction and operation.
- Evaluate whether the proposed project would comply with applicable LORS for protection of visual and aesthetic resources.

Visual Resources Appendix-1 (**Appendix VR-1**) of this staff assessment, **Visual Resources Terms, Definitions, and Analysis Method**, provides further detail on the approach and process used in this visual resources analysis.

Visual Sphere of Influence

The VSOI for the proposed HBEP takes into account the estimated visibility of its most visible structures on the project site, existing development in the area, and other variables potentially affecting visibility of the site. The highest level of visibility exists when the viewer is stationary and has direct and close-up views of the site (e.g., nearby residents). A lower level of visibility exists, for example, when the viewer is farther from the site (e.g., residents that are approximately a mile or more from the site) and/or are traveling on local roadways not immediately adjacent to the site.

The limits of the VSOI for the project generally extend to encompass the furthest distance at which potentially significant visual impacts could occur. For views of the HBEP, this distance was determined by staff to be approximately 1½ miles. At greater distances, the mass of project structures in the views would be much less dominant compared to views at closer distances.

The view from the end of the Huntington Beach Municipal Pier, with a sight line that is over 1½ miles from the project site, is a little beyond the VSOI. However, views of the coastline from the pier are unobstructed, and the pier is described as a visual asset in the Coastal Element of the City’s General Plan (City of Huntington Beach 2011). Views from the pier are considered in this analysis of impacts on visual resources.

Process to Select Key Observation Points

Sensitive Viewing Areas and Identification of Key Observation Points

Refinement of the visual analysis for the proposed HBEP involved identifying critical viewpoints, or KOPs, which are selected that would most clearly show the visual effects of the proposed project. Results of the VSOI analysis and photographic survey for the HBEP resulted in selection of seven critical viewpoints to represent views from areas with relatively high levels of visual sensitivity. The selected KOPs represent viewing conditions for nearby residential areas, designated scenic roadways, and visitor and recreation areas. **Visual Resources (VR) Figure 1** shows the results of the viewshed analysis and the KOPs for the proposed project. **VR Figure 2** shows further detail for the project area. These are the seven KOPs selected for this analysis:

- **KOP 1** – View from Huntington State Beach
- **KOP 2** – View from the Huntington Beach Municipal Pier
- **KOP 3** – View from Edison Community Park
- **KOP 4** – View from Magnolia Street near the Pacific Coast Highway
- **KOP 5** – View from the Driveway Entrance to the Huntington By-The-Sea Mobile Estates and RV Park
- **KOP 6** – View from the Pacific Coast Highway near Brookhurst Street
- **KOP 7** – View from the Southern Bluff of the Huntington Beach Mesa

Steps in the KOP Analysis

The evaluation of the visual sensitivity for each representative KOP includes consideration of five factors: *visual quality, viewer concern, visibility, number of viewers,* and *duration of view* (see **Diagram 1** in **Appendix VR-1**). *Overall viewer exposure* for each KOP is generally based on an average of the values for site visibility, number of viewers, and duration of view. *Overall visual sensitivity* is generally based on an average of the values for visual quality, viewer concern, and overall viewer exposure. **Appendix VR-1** includes definitions for the key terms used in this analysis.

The assessment of visual impacts by staff is based on the change that would occur from the introduction of new built elements in the VSOI. The *overall visual change* is typically based on an average of the values for *contrast, dominance,* and *view blockage* for each KOP. The rating scale to assess visual sensitivity and visual change ranges from low to high for each factor. The ratings for *overall visual sensitivity* and *overall visual change* are combined to determine the visual impact for each KOP (see **Table 5** in **Appendix VR-1**).

Visual Sensitivity for the KOPs

KOP 1 – View from Huntington State Beach (Existing Condition)

Huntington State Beach extends 2 miles from Newport Beach and the Santa Ana River to Beach Boulevard at the south end of Huntington City Beach. KOP 1 was photographed from Huntington State Beach, across the PCH from the project site (**VR Figure 3a, existing view**). The City's demographic information states that more than 16 million people visit the beach each year.

The tops of a row of Norfolk Island pines that were planted as part of a visual screen on the southwest border of the HBGS are visible below the HBGS structures in the existing view for KOP 1. The low-profile buildings of the Wetlands & Wildlife Care Center are visible in the mid-foreground of the photograph beyond the beach (light-colored buildings with a blue roof). The palm trees in the photograph are planted near

Huntington State Beach facilities on the west side of the PCH; none of the existing palm trees are part of the visual screening plan for the existing HBGS site.

The existing HBGS dominates eastward views from the beach. Views at this location are otherwise characterized by much lower profile structures and palm trees adjacent to Huntington State Beach facilities. **VR Figure 4** shows a characteristic view from a parking lot adjacent to Huntington State Beach photographed by staff in December 2012. Some of the Norfolk Island pines on the southwest border of the HBGS are visible in the distance next to the power plant. A partial row of myoporum shrubs is visible on the right side of **VR Figure 4**, providing minimal visual screening between the power plant site and the adjacent wetland (Magnolia Marsh). Transmission structures at the SCE switchyard behind the HBGS are also in the view.

The existing HBGS is composed of immense, complex, mechanical structures in an area where the built environment is generally characterized by low buildings and relatively open views of the ocean and coastline and nearby residential, recreational, and tourist-oriented uses. There is little or no visual coherence or harmony in the eastward view from KOP 1 and from other nearby viewpoints from Huntington State Beach. HBGS is a visually discordant built element in the view, and visual quality for KOP 1 is characterized as *low*.

Viewers at KOP 1 are beachgoers engaged in passive and active recreational activities. Other viewer groups near KOP 1 include visitors to the Wetlands & Wildlife Care Center along the southwest side of the HBGS site and motorists on the PCH. **VR Figure 5** shows a view of the power plant for southbound motorists on the PCH near Newland Street. Viewers near KOP 1 include people walking, bicycling, and jogging on the trail that parallels the southbound lanes of the PCH. Viewer concern for visitors to Huntington State Beach and other viewpoints near KOP 1 is considered *high*.

Under existing conditions, the lower portions of the HBGS structures are partially screened, but given the height and bulk of the power plant structures and the relatively steep viewing angle, views of the HBGS from KOP 1 are mostly unimpeded. Visibility of the project site at this location is *high*.

Staff presumes that the number of recreational users per day averages well over 200 and that the number of viewers for KOP 1 is *high* (see **Table 2** in **Appendix VR-1**).

The duration of view for KOP 1 varies depending on the beach visitor’s type of activity and whether a recreational activity is active (e.g., playing beach volleyball or surfing) or passive (e.g., walking on the beach). Duration of view for KOP 1 is considered *high* or *moderate to high*.

Based on the ratings for visibility, number of viewers, and duration of view, overall viewer exposure for KOP 1 is considered *high*.

Due to the dominance of the HBGS in views from KOP 1, visual quality is characterized as *low*. Viewer concern is characterized as *high*. Based on the ratings for visual quality, viewer concern, and overall viewer exposure, overall visual sensitivity for KOP 1 is considered *moderate to high*.

KOP 2 – View from the Huntington Beach Municipal Pier (Existing Condition)

KOP 2 was photographed from the end of the Huntington Beach Municipal Pier (**VR Figure 6a, existing view**). The pier is used by sport fishermen, pedestrians and sightseers, surfing spectators, and others. Tourist-oriented uses include a restaurant and shops. A lifeguard tower is on the pier.

The two existing 214-foot-tall boiler exhaust stacks are visible at the HBGS site in the center of the photograph, and the generating units behind the stacks appear as a massive built structure near the beach. Other than the exhaust stacks, very little structural detail can be discerned at the site. Views of the coastline from KOP 2 show the generally low-profile development and familiar palm trees in this coastal area. North of the power plant, the tile roof of the sprawling Hyatt Regency Huntington Beach is visible from KOP 2. The Waterfront Hilton Beach Resort is another prominent building in the coastal view, and it is partially visible on the left side of the photograph (**VR Figure 6a**). The scale of development up and down the coast as viewed from the pier is otherwise relatively uniform in height. The distant ridgeline of the Santa Ana Mountains is visible in the background beyond the HBGS.

VR Figure 7 was photographed by staff in December 2012 to show the visual character of Huntington Beach from a midpoint on the Huntington Beach Municipal Pier. As depicted in **VR Figure 7**, the attention of pedestrians on the pier could be drawn to the activities on the pier and the beach, which are often busy with people. The 4–5 story tile-roofed buildings in downtown Huntington Beach vary the form and line of built elements in background views from the pier. The nature and character of views from the pier vary widely depending on the time of day and the season. Although the HBGS exhaust stacks present a visually discordant feature in the coastal view, the structures are in the background and do not dominate the view from this viewpoint. The visual quality of views from KOP 2 is generally considered *moderate to high*.

The Huntington Beach Municipal Pier is an icon of the city and a popular tourist destination. Viewer concern for KOP 2 is assumed to be *high* due to the mostly recreational nature of the area.

Views toward the HBGS from KOP 2 are unobstructed and mostly unscreened; however, due to the distance between the viewpoint and the HBGS, visibility is considered *moderate* for KOP 2.

Because of the high number of tourists and recreationists to Huntington Beach and the many recreational opportunities in the area, the number of viewers for KOP 2 is considered *high*. Because pedestrians on the pier are likely to spend time casually surveying their surroundings and taking in the views, duration of view is considered *high*.

Based on the ratings for visibility, number of viewers, and duration of view, overall viewer exposure for KOP 2 is considered *moderate to high*.

Visual quality is characterized as *moderate to high*. Viewer concern is characterized as *high*. Based on the ratings for visual quality, viewer concern, and overall viewer exposure, overall visual sensitivity for KOP 2 is considered *moderate to high*.

KOP 3 – View from Edison Community Park (Existing Condition)

KOP 3 was photographed from the children's play area at Edison Community Park, approximately one-half mile from the existing HBGS site (**VR Figure 8a, existing view**). The park covers approximately 40 acres and includes picnic and barbecue facilities; basketball, tennis, and racquetball courts; children's play equipment; paved pathways; and a community center.

The view southwest from KOP 3 is from the south half of the park looking across Hamilton Avenue, an arterial road, and away from the play and sports areas inside the park. High voltage transmission lines and towers are visible bordering Hamilton Avenue along the south side of the park. The existing HBGS is clearly visible in the distance. **VR Figure 9** was photographed by staff to show another view of Edison Community Park looking southeast from near the KOP 3 viewpoint. Near foreground views are dominated by play and recreation areas, parkland trees, and buildings in the park. The view includes the transmission towers along Hamilton Avenue and tall light standards adjacent to a sports field in the park. Vehicles on Hamilton Avenue and portions of adjacent residential areas are visible in background views. Features in the landscape include mature landscape trees on the park grounds amid built parkland structures and evidence of the urban area beyond the park boundaries. The mixture of various built elements in the view generally detracts from the visual coherence and harmony of the park as a whole, and visual quality for KOP 3 is characterized as *moderate*.

Approximately 1,000 residences are within approximately one-quarter to one-half mile of the park in this community, although views of the existing HBGS from residential areas southeast and east of the site are at least partially screened visually by the earthen berm and dense row of vegetation along Magnolia Street between Hamilton Avenue and the Huntington Beach Channel. KOP 3 also represents views of the HBGS site from possible vantage points in residential areas north and west of Edison Community Park.

Viewers at KOP 3 include Huntington Beach residents and families engaged in play or sports activities at Edison Community Park. Although the view of the HBGS site is mostly unscreened, and the power plant structures are clearly visible in the background, park visitors at KOP 3 are expected to be engaged in on-site activities rather than closely observing the aesthetics of the visual environment beyond the park (see the discussion under "Duration of Views" in **Appendix VR-1**).

Edison Community Park is clean and well kept, and it is assumed that local residents using the park have a relatively high viewer concern due to their personal investment in the area (see the discussion under "Viewer Concern" in **Appendix VR-1**). Viewer concern is assumed to be *high* or *moderate to high* for KOP 3.

Views toward the HBGS from KOP 3 show the transmission line structures and the berm along Hamilton Avenue. The power plant structures are visible in the distance, and visibility of the project site is considered *moderate* for KOP 3.

No estimates are available for the number of visitors to Edison Community Park; however, by including nearby residents in the viewer group, the total number of viewers is estimated by staff to be *moderate to high* (see **Table 2** in **Appendix VR-1**). Residents and families using the park have opportunities to view the HBGS for extended periods of time during play and sport events, and duration of view is considered *moderate to high*.

Based on the ratings for visibility, number of viewers, and duration of view, overall viewer exposure for KOP 3 is considered *moderate to high*.

Visual quality is characterized as *moderate*. Viewer concern is characterized as *high* or *moderate to high*. Based on the ratings for visual quality, viewer concern, and overall viewer exposure, overall visual sensitivity for KOP 3 is considered *moderate to high*.

KOP 4 – View from Magnolia Street near the Pacific Coast Highway (Existing Condition)

KOP 4 was photographed from Magnolia Street along the southeast border of Magnolia Marsh near the PCH (**VR Figure 10a, existing view**). Foreground views of wetland vegetation and open water contrast sharply with near middleground views of the HBGS boiler exhaust stacks and power blocks beyond the wetland. The power plant site is approximately one-third mile from KOP 4, and the mechanical structures are distinctly visible at this distance.

Other views from Magnolia Street include views eastward across Brookhurst Marsh. Both marshes on either side of Magnolia Street are part of the Huntington Beach Wetlands complex that has been restored and reconnected to tidal influence; these marshes are part of the Orange Coast River Park providing open space wildlife habitat at the mouth of the Santa Ana River (California Coastal Conservancy 2011). **VR Figure 11** shows another view near KOP 4 that includes part of Brookhurst Marsh, the Huntington Beach Channel, and residences on the east side of Magnolia Street. Views toward the PCH and Huntington State Beach from KOP 4 include views of a few beach facilities and small groups of palm trees. Little variation is present in the form and line of natural and built features in the landscape for views south and southwest from KOP 4. Views of the water, soft brown and gray-green colors of the wetland vegetation, and wildlife that use the wetlands provide a respite from views of the HBGS and other nearby development; however, the power plant dominates views westward from KOP 4 and overshadows the subtle visual variety of natural elements in the marshlands. The nearby residences and concrete streetscape encroach on views in other directions from KOP 4. Visual quality for KOP 4 is characterized as *moderate*.

The viewpoint for KOP 4 primarily represents motorists, pedestrians, and bicyclists traveling north or south on Magnolia Street, which is part of the grid of arterial roads that interconnect the city's residential neighborhoods immediately north of the HBGS. Local residents entering and exiting the PCH at Magnolia Street have completely unobstructed foreground views of the HBGS from KOP 4. Given the proximity of KOP 4 to the PCH, this viewpoint approximately represents the foreground views for northbound motorists on this coastal highway.

Because there is no public access to Brookhurst Marsh, KOP 4 does not represent views from that part of the wetland complex. As described above under “Project Area Characteristics,” public access is provided to Magnolia Marsh through the Conservancy’s interpretive program, which includes an observation deck over the southwest corner of Magnolia Marsh and an interpretive trail along the fence line between the marsh and the power plant site. The Huntington Beach Wetlands are likely considered an important visual resource by the city’s residents.

It is assumed that motorists, pedestrians, and bicyclists using Magnolia Street include many local residents with relatively high viewer concern for views in their community. Motorists on the PCH near KOP 4, especially those traveling through Huntington Beach for the first time, are likely to be impressed by the incongruous and intrusive presence of the HBGS in views so near the coastline. Viewer concern is assumed to be *high* for KOP 4.

Under existing conditions, there is essentially no visual screening of HBGS from the area of KOP 4, and views of the HBGS from KOP 4 are unimpeded. Visibility of the existing power plant at this location is *high*.

Magnolia Street is one of the arterial roads connecting the Huntington Beach community to the PCH; as stated in the “Traffic and Transportation” section of the AFC, traffic volumes on Magnolia Street near the HBGS average 6,000 vehicles per day. Based on this level of traffic, the number of viewers for KOP 4 is *moderate to high*. Traffic volumes on the PCH in the vicinity of the HBGS average from 33,000 to 42,000 vehicles per day. Because of high traffic volumes on the PCH near KOP 4, the overall number of viewers for KOP 4 is considered by staff to be *high*. It is assumed that the attention of motorists near the intersection of Magnolia Street at the PCH is primarily focused on traffic conditions, other motorists, bicyclists, and nearby pedestrians. Duration of view for motorists on Magnolia Street is estimated to be *moderate*. For pedestrians, bicyclists, and visitors to the marsh near KOP 4, duration of view increases to *high*. For motorists on the PCH, duration of view is estimated to be *moderate to high* (i.e., 1–2 minutes). The overall duration of view for KOP 4 is estimated to be *moderate to high*.

Based on the ratings for visibility, number of viewers, and duration of view, overall viewer exposure for KOP 4 is considered *high*.

Visual quality is characterized as *moderate*. Viewer concern is characterized as *high*. Based on the ratings for visual quality, viewer concern, and overall viewer exposure, overall visual sensitivity for KOP 4 is considered *moderate to high*.

KOP 5 – View from the Driveway Entrance to the Huntington By-The-Sea Mobile Estates and RV Park (Existing Condition)

KOP 5 was photographed from inside the driveway entrance to the "Huntington By-The-Sea Mobile Estates and RV Park" (mobile home park) (**VR Figure 12a, existing view**). The existing palm trees in the foreground border the entrance to the mobile home park and are not part of the visual screening plan for the existing HBGS site. Because the photographic images for KOP 5 are shown at a reduced scale (i.e., not at life-size scale), the power plant structures appear smaller in **VR Figure 12a** than they would to an observer at this viewpoint. The massive complex of structures at HBGS Units 3 and 4 are clearly visible and prominent in the foreground view from Newland Street and the area near KOP 5, although the viewpoint for KOP 5 downplays the visibility of the HBGS structures. HBGS Units 1 and 2 are visible beyond Units 3 and 4 from the area near KOP 5. The visual clutter of the piping and steel support structures of the power blocks are displayed, and no exterior structure or façade encloses the inner mechanical apparatus of the power plant.

The transmission structures at the SCE switchyard are visible behind the power plant from Newland Street near the viewpoint for KOP 5 (**VR Figure 13**). The landscape trees and other plantings across Newland Street partially screen views of the switchyard. The large decommissioned fuel oil tank north of the SCE switchyard is partially visible in the middle of the photograph in **VR Figure 13**. The viewpoint for KOP 5 is close to Huntington State Beach. Views southwest from this location show the intersection of Newland Street at the PCH and a sparse row of palm trees along the west side of Newland Street adjacent to the mobile home park. The terrain to the west appears flat at this location, and the beach and ocean are scarcely visible beyond the PCH. The visual pattern of landscape elements along the HBGS property in the near foreground softens the view of the power plant site, but the streetscape views from this location are generally unremarkable. The view southeast from KOP 5 is dominated by the massive size and distinct structural elements of the HBGS power blocks and the one exhaust stack in front of Units 3 and 4. No visual coherence or harmony is present in the view. Visual quality for KOP 5 is characterized as *low*.

The viewpoint for KOP 5 represents motorists, pedestrians, and local residents traveling north or south on Newland Street. Local residents and vacationers at the mobile home park have mostly unobstructed foreground views of the HBGS from KOP 5 and the area near this viewpoint. Viewer groups represented by KOP 5 are primarily expected to be local residents and recreationists, and viewer concern is assumed to be *high* for this KOP.

Under existing conditions, landscape visual screening elements partially screen the lowest structures at the HBGS that would otherwise be visible from KOP 5 and the mobile home park. The bulk of the HBGS structures are completely visible and unscreened above the tops of the landscape trees at the HBGS site. Views of the HBGS from KOP 5 are mostly unimpeded, and visibility of the existing power plant at this location is *high*.

Newland Street is one of the arterial roads connecting the Huntington Beach community to the PCH; as stated in the “Traffic and Transportation” section of the AFC, traffic volumes on Newland Street average 12,000 vehicles per day. The mobile home park includes at least 300 mobile home sites and more than 100 recreational vehicle camp sites. Based on street traffic volume and the number of residences in the mobile home park, the number of viewers for KOP 5 is *high* (**Table 2** in **Appendix VR-1**). It is assumed that the attention of motorists near the intersection of Newland Street at the PCH is primarily focused on traffic conditions, other motorists, bicyclists, and nearby pedestrians. Duration of view for motorists on Newland Street is estimated to be *moderate*. For pedestrians and bicyclists near KOP 5 and residents at the mobile home park, duration of view increases to *high*. The overall duration of view for KOP 5 is estimated to be *moderate to high*.

Based on the ratings for visibility, number of viewers, and duration of view, overall viewer exposure for KOP 5 is considered *high*.

Visual quality is characterized as *low*. Viewer concern is characterized as *high*. Based on the ratings for visual quality, viewer concern, and overall viewer exposure, overall visual sensitivity for KOP 5 is considered *moderate to high*.

KOP 6 – View from the Pacific Coast Highway near Brookhurst Street (Existing Condition)

KOP 6 was photographed from the shoulder next to the northbound lanes of the PCH looking north from a viewpoint immediately north of Brookhurst Street (**VR Figure 14a, existing view**). This KOP represents the view for northbound motorists on the PCH as they enter Huntington Beach. The PCH is a six-lane highway at this location, and the roadway itself commands the full attention of motorists along the highway corridor depending on the traffic flow and time of day of travel. HBGS Unit 1 and one of the exhaust stacks are clearly visible in the distant foreground from KOP 6, and they are the tallest and most prominent features in the view. The existing power plant is approximately 1 mile ahead of KOP 6 near the east side of this coastal highway, and as motorists continue north, the HBGS appears to increase in size until it dominates the field of view from the PCH near Newland Street.

A chain link fence along the east side of the highway separates the PCH from Brookhurst Marsh, which is not open to the public. Residences beyond the marsh and the Huntington Beach Channel are partially visible on the right side of the photograph, and portions of the fuel oil storage tanks at the HBGS site are visible between the power plant structures and the residences. Stands of palm trees are visible along the highway. A small sandy berm along the left side of the photograph separates the highway from a Huntington State Beach parking lot. A wide stretch of beach is visible to the west beyond the field of view captured in the photograph for **VR Figure 14a**. The view from KOP 6 is mostly open with few structures to limit views and only slight variations in topography. Except for the marsh, the area near KOP 6 is fully developed. Views of the ocean from the PCH are subdued to some extent by the distractions of roadway traffic and adjacent parking lots providing easy access to the beach. Visual quality for KOP 6 is characterized as *moderate*.

Many travelers heading north on the PCH near KOP 6 are assumed to have initiated their travels and are destined for points outside of the Huntington Beach area. A large segment of travelers near KOP 6 is presumed to include motorists who entered the northbound lanes of the PCH from Brookhurst Street, which is a six-lane major arterial connecting the PCH in the south to Interstate 405 and Fountain Valley to the north. The characteristics and preferences of motorists near KOP 6 vary depending on the intentions of the drivers and any passengers they may carry. Some segment of travelers is assumed to be engaged in work, business, or commerce; these motorists may be primarily focused on getting from one place to another. A considerable segment of travelers are vacationers and recreationists visiting the beach or the center of Huntington Beach further north to sightsee or attend recreational events. Motorists on this coastal highway may generally have higher expectations for views along California's coastline compared to other heavily-traveled inland highways. Viewer concern for motorists near KOP 6 is considered *moderate to high* or *high*, depending on the preferences of the viewers.

Under existing conditions, direct views of the HBGS from KOP 6 are unobstructed and unscreened. Due to the distance between the viewpoint and the HBGS, visibility is considered *moderate to high* for KOP 6.

In addition to the high traffic volumes on the PCH near the HBGS, traffic volumes on Brookhurst Street near its intersection with the PCH average 12,000 vehicles per day. The number of viewers for KOP 6 is considered *high*. For views from the PCH near Brookhurst Street, the HBGS appears near the center of the field of view for northbound motorists. Depending on traffic conditions, direct views of the power plant could continue for up to 2 minutes. The duration of view for KOP 6 is considered *moderate to high*.

Based on the ratings for visibility, number of viewers, and duration of view, overall viewer exposure for KOP 6 is considered *moderate to high*.

Visual quality is characterized as *moderate*. Viewer concern is characterized as *moderate to high* or *high*. Based on the ratings for visual quality, viewer concern, and overall viewer exposure, overall visual sensitivity for KOP 6 is considered *moderate to high*.

KOP 7 – View from the Southern Bluff of the Huntington Beach Mesa (Existing Condition)

KOP 7 was photographed from Frankfort Avenue to represent views from the residential area along the southern bluff of the Huntington Beach Mesa (Figure C-17 in the Coastal Element of the General Plan shows the bluffs northwest of the project site [City of Huntington Beach 2011]). The viewpoint for KOP 7 is about 1¼ miles northwest of the existing HBGS at the entrance to the Huntington Shorecliffs Mobile Home Park (**VR Figure 15a, existing view**). The elevation increases abruptly along the mesa bluffs compared to the proposed project site; therefore, views toward the HBGS from Frankfort Avenue are generally open.

The two existing HBGS 214-foot-tall exhaust stacks and generating units are visible on the horizon beyond the tops of residences and landscape trees between the viewpoint for KOP 7 and the HBGS site. Other than the exhaust stacks, very little structural detail can be discerned at the site. A mixture of types of residences, other relatively low-profile structures, palm trees, and other landscape plantings are visible from Frankfort Avenue. Although views from KOP 7 toward the HBGS are relatively open due to the elevated viewpoint, the landscape generally shows an expanse of rooftops and stands of landscape trees and more residences in the distance. Very little visual coherence or harmony is apparent in views from KOP 7, and no particular visual element draws the viewer's attention. Visual quality for KOP 7 is characterized as *moderate*.

The viewpoint for KOP 7 represents Huntington Beach residents, and viewer concern is assumed to be *high* for this KOP. Views toward the HBGS from KOP 7 are mostly unscreened; however, due to the distance between the viewpoint and the HBGS, visibility is considered *low to moderate* for KOP 7. Approximately 35 residences are located along the north side of Frankfort Avenue east of Delaware Street. The existing HBGS is probably visible from other residences along the bluff; therefore, the number of viewers for KOP 7 is considered *moderate to high* or *high* (**Table 2** in **Appendix VR-1**). Duration of view for residential viewers is considered *high* (see the discussions under "Number of Viewers" and "Duration of Views" in **Appendix VR-1**).

Based on the ratings for visibility, number of viewers, and duration of view, overall viewer exposure for KOP 7 is considered *moderate to high*.

Visual quality is characterized as *moderate*. Viewer concern is characterized as *high*. Based on the ratings for visual quality, viewer concern, and overall viewer exposure, overall visual sensitivity for KOP 7 is considered *moderate to high*.

DIRECT AND INDIRECT IMPACTS AND MITIGATION MEASURES

This assessment of impacts on visual resources addresses impacts that would occur from demolition, construction, and operation of the power plant components at the HBEP site. Due to the multi-year construction periods for the proposed project, impacts on visual resources from demolition and construction activities are considered to be long term rather than temporary.

Section 5.13.4 of the AFC, "Mitigation Measures," states that the proposed project "would slightly increase the overall visual quality (AES Southland Development 2012b). Therefore, the project will not result in a significant visual impact and visual resource mitigation measures are not required for the HBEP because the visual impacts are at a less-than-significant level." Section 5.13.2.5 of the AFC, "Impact Significance," states that "[t]he presence of the Huntington Beach Generating Station is already considered [to] be a visual issue in the Coastal Zone of the City of Huntington Beach. The project will represent a slight improvement over the existing visual quality of the project area.…" This section of the AFC concludes that "[t]he project's visual impacts will be generally positive and less than significant."

Staff's analysis under, "Visual Change for the KOPs," evaluates the visual resources impacts on sensitive viewer groups. While the proposed HBEP could slightly improve the overall visual quality at the project site, staff has identified significant impacts at two KOPs relating primarily to the increase in the size and mass of project structures at some locations on the site. . A conceptual visual screening plan is necessary to determine the extent to which significant visual resources impacts could be reduced for KOP 4 and KOP 5. Staff has also identified significant impacts from project demolition, construction, and operation activities and recommends appropriate mitigation measures that would reduce these impacts to less than significant, as discussed below under "Project Demolition and Construction," and "HBEP Lighting." The proposed project's potential to comply with applicable LORS is discussed below under, "Compliance with Laws, Ordinances, Regulations, and Standards."

Major HBEP Components

The proposed project components would be located on the existing HBGS 28.6-acre site. No off-site linear elements are proposed for the HBEP, although two 230-kV generation tie lines would be constructed on the site to connect each power block to the existing SCE switchyard. **VR Table 1** summarizes the dimensions and quantities of the project components on the HBEP site that would likely be visible to the public from off-site locations.

Visual Resources Table 1
Visually Prominent Proposed HBEP Structures

Project Feature	Length (feet)	Width (feet)	Height (feet)	Power Block 1 (quantity)	Power Block 2 (quantity)	Elsewhere On Site (quantity)
Combustion Gas Turbine (CGT)	89	32	34	3	3	—
CGT Generator Enclosure	16	39	34	3	3	—
CGT/Heat Recovery Steam Generator (HRSG) Transition Duct	14	32	31	3	3	—
CGT Enclosure	41	32	25	3	3	—
Steam Turbine Generator (STG) Enclosure	59	55	40	1	1	—
HRSG	77	44	92	3	3	—
Stack (see note)	—	—	120	3	3	—
CGT Air Intake System	40	17	38	3	3	—
Fuel Gas Compressor Building	144	75	25	—	—	1
Air Cooled Condenser	209	127	104	1	1	—
Control / Administration Building	100	72	40	—	—	1
Maintenance / Warehouse Building	72	60	35	—	—	1
Transformer Wall	53	42	30	4	4	—
Transmission Structure	—	—	85–135	3	2	—
Transmission Dead-End Structure	—	—	75	3	3	—

Source: AES Southland Development 2012a
Note: The diameter of the stacks is approximately 18 feet.

Visual Change for the KOPs

The discussion above under, “Steps in the KOP Analysis,” summarizes the process to determine impact significance. **Appendix VR-2** shows the KOP evaluation matrix summarizing the process to determine the visual impact conclusions described below.

KOP 1 – View from Huntington State Beach (Proposed Condition)

The visual simulation for KOP 1 shows the HBEP as it would appear at the end of demolition and construction activities for a viewer at Huntington State Beach across the PCH from the project site (**VR Figure 3b**, **simulated view**). Similar to the existing power plant, the largest and tallest structures at the project site would be clearly visible from KOP 1. Visually prominent structures at the HBEP Power Block 2 (the new structures in the left half of the photograph in place of the HBGS Units 3 and 4) would include the three heat recovery steam generators (HRSGs) and stacks (**VR Table 1** [above] lists the dimensions of these structures). The air cooled condenser (ACC) unit at HBEP Power Block 2 would be clearly visible behind the HRSGs. The HBEP Power Block 1 would be constructed in the northeast portion of the project site (right half of the photograph) in place of the HBGS Unit 5 and the East Oil Tank. The HBGS Units 1 and 2 would be removed after the HBEP Power Blocks 1 and 2 became operational.

Based on the preliminary grading plan for the HBEP and the proposed location for the on-site perimeter road and other structures, most of the existing on-site landscape trees along the Wetlands & Wildlife Care Center property (left side of **VR Figure 3b** in front of the HBEP Power Block 2) would be permanently removed from the project site. **VR Figure 16** shows a site plan of areas where on-site landscape plantings would be removed entirely or removed and replaced following project construction. As discussed above, the palm trees that are in the view from KOP 1 (**VR Figure 3a**) are next to Huntington State Beach facilities and would be unaffected by the proposed project.

Although the HBGS exhaust stacks would be demolished and would not be reconstructed for the proposed project, the existing power block structures would be replaced with similarly massive, steely power plant structures. Like the existing HBGS, the HBEP would dominate eastward views from most locations along the beach in the vicinity of KOP 1. Although the HBEP Power Block 1 would be somewhat less visually dominant than the existing HBGS Units 1 and 2, new structures in the middle of the field of view would include new steel transmission monopoles and the ACC for Power Block 1.

Like the existing power plant, the metal surfaces and massive geometric shapes of the new HBEP structures would contrast sharply with the relatively low-profile structures in the vicinity of KOP 1 (e.g., the buildings at the Wetlands & Wildlife Care Center). However, the degree of visual contrast created by the existing HBGS compared to the surrounding coastal environment would not be significantly better or worse with construction and operation of the new power plant facilities at the HBEP site. The visual effect of the HBEP would be similar to the effect of the existing HBGS for KOP 1. The degree of visual contrast created by the power plant structures at the project site compared to existing conditions is considered *low to moderate*. The visual simulation for

KOP 1 shows the proportionate size of the HBEP structures as a whole compared to the existing HBGS structures. Like the existing power plant, the new power plant structures would dominate eastward views. The topography is relatively flat or gently sloping in the project area, and the Santa Ana Mountains are visible in the background from some vantage points. Views would continue to be closed and limited by structures at the power plant site. As shown in the simulated view for KOP 1, the visual effect of HBEP would create a nearly continuous horizontal band of gray, metal structures of varying heights across the field of view. A uniform row of palm trees proposed for planting at the site by the applicant is visible in front of the lower portions of the HBEP Power Block 2 structures (**VR Figure 3b**). Compared to existing conditions, view dominance and view blockage in the field of view are considered *low*.

The overall visual change is typically based on an average of the values for contrast, dominance, and view blockage. Although overall visual sensitivity for KOP 1 is considered *moderate to high*, the overall visual change for the proposed HBEP compared to existing conditions with construction of the project is *low*. From this viewpoint, demolishing the HBGS exhaust stacks and replacing the existing massive power blocks with angular, metallic power plant structures would not change visual resource conditions to any notable or significant degree. Compared to existing conditions, implementation of the HBEP would not substantially degrade the existing visual character or quality of the site and its surroundings for views at or near KOP 1, and the impact is considered less than significant.

KOP 2 – View from the Huntington Beach Municipal Pier (Proposed Condition)

The visual simulation for KOP 2 shows the HBEP as it would appear for a viewer at the end of the Huntington Beach Municipal Pier (**VR Figure 6b, simulated view**). From KOP 2, the proposed HBEP appears to cover a larger area compared to the existing HBGS. As shown by the visual simulation, the ACC at Power Block 2 is visible on the left side of the group of HBEP structures. Although the HBGS boiler exhaust stacks would be removed, the proposed HBEP appears as a collection of industrial-type structures across the landscape. The flat, metal surfaces of the HBEP structures would contrast with other coastal development and the natural landscape. The visual effect of the HBEP would be similar to the effect of the existing HBGS for KOP 2. The 1½-mile distance to the project site from the viewpoint for KOP 2 would temper the visual contrast of the proposed power plant structures with the environment. Due to the distance between the viewpoint and the project site, the degree of visual contrast for KOP 2 is considered *low to moderate*.

The visual simulation for KOP 2 appears to show an increase in the extent and overall mass of structures at the HBEP site. However, the new structures would not completely dominate the landscape due to their distance from the viewer, and dominance of the proposed project in the field of view is considered *low to moderate*. Similar to the HBGS, the open views across the water and landscape toward the Santa Ana Mountains would be interrupted to a degree at this location. Compared to the existing

HBGS, construction of the new power plant structures for the HBEP would create a *low to moderate* degree of view blockage.

For KOP 2, although overall visual sensitivity is considered *moderate to high*, the overall visual change for the proposed HBEP compared to existing conditions with construction of the project is *low to moderate*. Compared to existing conditions, implementation of the HBEP would not substantially degrade the existing visual character or quality of the site and its surroundings for views at or near KOP 2, and the impact is considered less than significant.

KOP 3 – View from Edison Community Park (Proposed Condition)

The visual simulation for KOP 3 shows the HBEP as it would appear for a viewer from the south half of the park looking across Hamilton Avenue and away from the play and sports areas at this community park (**VR Figure 8b, simulated view**). The Power Block 2 HRSGs, stacks, and expansive ACC are visible on the left side of the visual simulation beyond the earthen berm along the south side of Hamilton Avenue. The Power Block 1 ACC is visible in the center of the field of view and further in the distance compared to Power Block 2. The existing transmission structures at the SCE switchyard would remain in the view for KOP 3.

The visual simulation for KOP 3 shows a change in the massing of structures at the HBEP site. However, the new structures would not dominate the landscape due to their distance from the viewer and the direction of view away from the immediate environment of the play and sports fields at the park. The degree of visual contrast and dominance of the proposed project in the field of view compared to existing conditions is considered *low to moderate*. No landscape features are visible beyond the existing HBGS from KOP 3, and similar to the existing HBGS, construction of the new power plant structures for the HBEP would create a *low to moderate* degree of view blockage.

Overall visual sensitivity for KOP 3 is considered *moderate to high*. The overall visual change for the proposed HBEP compared to existing conditions with construction of the project is *low to moderate*. Compared to existing conditions, implementation of the HBEP would not substantially degrade the existing visual character or quality of the site and its surroundings for views at or near KOP 3, and the impact is considered less than significant.

KOP 4 – View from Magnolia Street near the Pacific Coast Highway (Proposed Condition)

The visual simulation for KOP 4 shows the HBEP as it could appear for a viewer from Magnolia Street along the southeast border of Magnolia Marsh near the PCH (**VR Figure 10b, simulated view**). Under the proposed HBEP, Power Block 1 would be constructed adjacent to Magnolia Marsh at the northeast corner of the project site. The new Power Block 1 HRSGs, stacks, and ACC would replace one of the relatively low-profile decommissioned fuel oil tanks at the site, and the overall mass and bulk of power plant structures at the site would increase noticeably compared to existing conditions. To the left of center in the field of view for KOP 4, construction of Power Block 2 for

HBEP would change the massing of structures to a degree compared to the existing power block structures. Removal of the HBGS exhaust stacks would be a relatively minor change in existing visual conditions given the replacement of those structures with three new stacks and HRSGs and the ACC for Power Block 2. New steel monopole transmission structures would be constructed at the project site; four tall monopoles are visible in the simulated view from KOP 4. An 8-foot masonry wall proposed by the applicant for installation along the site perimeter is visible at the edge of Magnolia Marsh (**VR Figure 10b**).

Similar to the existing power plant, the massive, industrial-type structures of the proposed HBEP would contrast sharply with the natural landscape and subtle colors and textures of the marsh. The proposed HBEP would increase the mass, number, and prominence of HBEP structures in the view for KOP 4. The visual effect of the power plant structures at Power Block 1 would be acute for nearby residents. Because Power Block 1 would be constructed at the furthest northeast corner of the project site adjacent to Magnolia Marsh, the level of visual contrast would be greater for this KOP compared to existing conditions. The degree of visual contrast created by the proposed HBEP power plant structures at the project site is considered *moderate to high*.

Compared to existing conditions, the new power plant structures would cause a *moderate to high* degree of view dominance from KOP 4 and other nearby viewpoints, including the residential area east of Magnolia Street and north of the Huntington Beach Channel, the PCH near Magnolia Street, and the observation deck and interpretive trail in Magnolia Marsh. The largest structures at Power Block 1 would include three HRSGs and stacks, and an ACC unit (**VR Table 1**, above). The applicant's proposed 8-foot masonry wall would not visually screen any of the prominent structures. Construction of the new power plant structures for the HBEP would create a *moderate to high* degree of view blockage compared to existing conditions.

Overall visual sensitivity for KOP 4 is considered *moderate to high*, and the overall visual change for the proposed HBEP compared to existing conditions with construction of the project is *moderate to high*. Compared to existing conditions, implementation of the HBEP would substantially degrade the existing visual character of the site and its surroundings for views at or near KOP 4, and the impact is considered significant.

The applicant and the City are investigating visual screening concepts for the HBEP. Staff does not yet have access to the City's proposed plans to visually enhance or screen the proposed HBEP; therefore, staff cannot assess whether the plan could reduce the impact at KOP 4. Assuming a visual screening plan for the HBEP will be developed and made available to staff, the FSA will assess whether such a plan would reduce the impact at KOP 4 to a less-than-significant level.

KOP 5 – View from the Driveway Entrance to the Huntington By-The-Sea Mobile Estates and RV Park (Proposed Condition)

As described above, the images for KOP 5 are shown at a reduced scale (i.e., not at life-size scale), and the power plant structures appear smaller than they would to an observer at this viewpoint (**VR Figure 12b, simulated view**). The HBEP Power Block 2

HRSGs and stacks would be constructed close to the same location as the existing HBGS Units 3 and 4. The view from KOP 5 following construction of the HBEP would include a side view of the immense ACC (to the left of the power block in **VR Figure 12b**), which would measure 127 feet wide and stand 104 feet tall (**VR Table 1**). Although **VR Figure 12b** shows new landscape trees beyond the entrance to the power plant site (the area to the left of the arrow in the center of the simulation), the applicant's site plan in **VR Figure 16** shows vegetation removed from the area inside the entrance with no new vegetation planted in its place. Some of the trees visible in the background of **VR Figure 12b** (the area to the right of the arrow in the center of the simulation) are in an area where the existing vegetation would be removed and replaced (**VR Figure 16**).

VR Figure 17 shows the simulated view for KOP 5 without the ACC unit as published in the AFC. The viewpoint for the original KOP 5 simulation is closer to Newland Street near the entrance to the mobile home and RV park. **VR Figure 17** is reproduced at closer to life-size scale compared to **VR Figure 12b**. The existing trees behind the 8-foot masonry wall in **VR Figure 17** are in an area where the existing vegetation would be removed and replaced (**VR Figure 16**).

The overall mass and visual prominence of HBEP structures would be much greater than what is shown in the visual simulation for KOP 5. Given the proximity of Power Block 2 structures to KOP 5, a great expanse of equipment and buildings would be unscreened and visible from viewpoints along this part of Newland Street. The level of visual contrast would be greater for this KOP compared to existing conditions. The most visible power plant structures would appear as expansive, gray metallic surfaces, emphasizing the industrial-like appearance of the HBEP as a whole. Compared to existing conditions, the level of visual contrast for KOP 5 would be *moderate to high* or *high*.

The proposed HBEP would increase the mass, number, and prominence of HBEP structures in the view for KOP 5 compared to existing conditions. The new power plant structures would cause a *moderate to high* degree of view dominance from KOP 5 and other nearby viewpoints. Construction of the new power plant structures for the HBEP would create a *moderate to high* degree of view blockage.

Overall visual sensitivity for KOP 5 is considered *moderate to high*, and the overall visual change for the proposed HBEP compared to existing conditions with construction of the project is *moderate to high*. Compared to existing conditions, implementation of the HBEP would substantially degrade the existing visual character of the site and its surroundings for views at or near KOP 5, and the impact is considered significant.

Assuming a visual screening plan for the HBEP will be developed and made available to staff, the FSA will assess whether such a plan would reduce the impact at KOP 5 to a less-than-significant level.

KOP 6 – View from the Pacific Coast Highway near Brookhurst Street (Proposed Condition)

The visual simulation for KOP 6 shows the HBEP as it would appear for a viewer from the shoulder next to the northbound lanes of the PCH near Brookhurst Street (**VR Figure 14b, simulated view**). The simulation of the HBEP Power Block 1 shows a row of three HRSGs and stacks that are partially obscured beyond the chain link fence between the PCH and Brookhurst Marsh. For a motorist in an automobile or truck on the PCH near KOP 6, the viewpoint would be further from the fence and elevated slightly compared to the view for a pedestrian at KOP 6; therefore, the visibility of HBEP Power Block 1 structures would increase for a motorist compared to the view for a pedestrian at KOP 6. As motorists continue north, the HBEP power blocks would appear to increase in size until the six HRSGs and stacks and the two ACC units would dominate the view near the project site from northbound lanes of the PCH.

The visual simulation for KOP 6 shows a change in the massing of structures at the HBEP site. Although the new structures would not dominate the landscape due to their distance from the pedestrian viewer at KOP 6, the visual dominance of the power blocks and ACCs would increase for northbound motorists on the PCH. Compared to existing conditions, the degree of visual contrast and dominance of the proposed project in the field of view is considered *low to moderate*. With removal of the HBGS power blocks and exhaust stacks, the Waterfront Hilton Beach Resort along the east side of the PCH would be partially visible approximately 2 miles north of the viewpoint for KOP 6. Compared to existing conditions, view blockage would not change significantly, and construction of the new power plant structures for the HBEP would create a *low* degree of view blockage.

Overall visual sensitivity for KOP 6 is considered *moderate to high*. The overall visual change for the proposed HBEP compared to existing conditions with construction of the project is *low to moderate*. Compared to existing conditions, implementation of the HBEP would not substantially degrade the existing visual character or quality of the site and its surroundings for views at or near KOP 6, and the impact is considered less than significant.

KOP 7 – Views from the Southern Bluff of the Huntington Beach Mesa (Proposed Condition)

The visual simulation for KOP 7 shows the HBEP as it would appear for a viewer from the residential area along Frankfort Avenue (**VR Figure 15b, simulated view**). Similar views toward the project site from residential streets near the southern bluff of the Huntington Beach Mesa could be possible. Other viewpoints along Frankfort Avenue would be at approximately the same distance from the site as the viewpoint for KOP 7. As shown in the simulation for KOP 7, the HBEP power blocks would barely be visible beyond the roof tops and palm trees covering most of the foreground of the view. The HBEP HRSGs and stacks would not be noticeably visible behind the trees in the distance.

Removal of the HBGS exhaust stacks somewhat reduces the level of visual contrast for KOP 7; however, the approximately 1¼-mile distance to the project site from KOP 7 greatly tempers the visual contrast for either the existing HBGS or the proposed project. Compared to existing conditions, the degree of visual contrast compared to existing conditions is considered *low*. Similarly, visual dominance and view blockage are considered *low* for KOP 7.

Overall visual sensitivity for KOP 7 is considered *moderate to high*. The overall visual change for the proposed HBEP compared to existing conditions with construction of the project is *low*. Compared to existing conditions, implementation of the HBEP would not substantially degrade the existing visual character or quality of the site and its surroundings for views at or near KOP 7, and the impact is considered less than significant.

Project Demolition and Construction

Construction Overview

Except for the third quarter of 2020, construction of the HBEP at the project site would include continuous work during each construction period starting at the beginning of 2015 and continuing through 2022.

The proposed project would require several areas for construction worker parking and construction laydown during site demolition and construction. Parking for workers would include an existing 3-acre open lot on Newland Street across from the project site with space for about 300 parking stalls. This open lot borders the east side of the "Huntington By-The-Sea Mobile Estates and RV Park." An open, undeveloped, 2½-acre paved lot at the southwest corner of Beach Boulevard and the PCH would provide about 215 parking stalls for construction workers. No existing visual buffering screens public views of either of these open lots, which would presumably be full of vehicles during daylight hours and sometimes at night while construction progressed on the HBEP. Other proposed construction parking areas include an existing Huntington Beach parking lot south of the PCH, a small lot at the project site, and an area at the Plains All American Tank Farm east of the project site. **VR Figure 18** delineates the construction worker parking areas for the proposed project.

A 16-acre off-site construction laydown area for storage of HBEP components would be established in an open lot next to the AES Alamitos Generating Station (AGS) in Long Beach, California. The laydown area is along the west side of a riprapped and channelized segment of the San Gabriel River that is flanked by industrial uses, including the Los Angeles Department of Water and Power's Haynes Generating Station, decommissioned fuel oil tanks, high-voltage transmission lines, and the AGS. A segment of the San Gabriel River Bike Trail borders the east side of the river through this industrial area.

Construction-Related Effects

The intensity of the long-term construction and demolition impact on visual resources would be greatest for sensitive viewer groups (primarily residents and recreationists) at the closest viewing distances to the project site. The presence and movement of heavy construction equipment and vehicles, large-scale construction and demolition work, and generation of dust over an approximately 8-year construction time frame at the project site is considered a significant visual impact of the proposed project. The long-term construction time frame could impact the ground surface on or adjacent to the project site from movement of heavy equipment and temporary storage of construction materials. Existing landscaped areas and the ground surface of other areas at or near the site that would not be permanently impacted by the HBEP could be damaged or destroyed during project construction. Long-term construction impacts at the HBEP site would cause substantial degradation of the existing visual character of the site and its surroundings, and the impact is considered significant.

The largest proposed construction parking area is the existing Huntington Beach parking lot south of the PCH. Because this is an existing City parking facility that is set back from the PCH, no visual impact would occur from its use during project construction. Two other parking areas, one at the project site and the other at the Plains All American Tank Farm east of the project site, would not be adjacent to public use areas, and no visual impact would occur from their use for construction parking.

Staff concludes that long-term use of the unscreened open lots for parking of hundreds of construction vehicles on Newland Street across from the project site and along the PCH at Beach Boulevard would substantially degrade the existing visual character of adjacent areas (see **VR Figure 18**). The primary visual effect is the introduction of what could appear to be ad hoc parking for trucks and other vehicles on undeveloped lots.

Condition of Certification **VIS-1** is proposed to require preparation and implementation of a Construction Screening and Site Restoration Plan to screen construction areas, including the two construction parking lots that would be established on Newland Street and the PCH at Beach Boulevard. **VIS-1** would require restoration of ground surfaces temporarily disturbed during project construction and demolition. Implementation of **VIS-1** would reduce construction-related impacts on visual resources at the project site and the two parking areas to less than significant.

Although the purpose of screening fencing is to reduce or block views of construction sites and parking areas, the screening material could either be decorative and visually attractive or blend somewhat with the surrounding environment. **VR Figure 19a** and **19b** show examples of construction screening that could be suitable for use to screen the HBEP site and two parking areas. Types of possible screening fencing include unobtrusive designs in shades of dark green or other relatively neutral colors. Other options include mesh vinyl material printed with outdoor images (e.g., a beach and palm tree scene).

The AGS is in an area with existing and former utility uses, and use of the 16-acre open lot at the AGS site for construction laydown would be a relatively minor change in visual resources conditions at this location. This change would not significantly alter the visual character or quality of the site or surrounding area, and no impact on visual resources would occur.

<u>HBEP Lighting</u>

Overview of Project Lighting

Project Construction

Section 5.13.2.3.5 of the AFC, “Lighting,” summarizes lighting requirements for night construction and commissioning activities. Although most construction activities would occur during daytime hours, additional hours could be necessary to complete critical work (AES Southland Development 2012b). During some construction periods and the project commissioning/startup phase, work would continue 24 hours per day, 7 days per week. The AFC states that nighttime construction and commissioning lighting would be shielded and directed toward the center of the construction activity. Task-specific lighting would be used to the extent practicable and in compliance with worker safety regulations. The AFC also states that “[d]espite these measures, there may be limited times during the construction/commissioning period when the project site may appear as a brightly lit area as seen in close views and from distant hillside residential areas.” In response to staff’s data requests on construction lighting, the applicant states there would be no times during construction when continuous lighting of tall structures (e.g., cranes or scaffolding) would be necessary (AES Southland Development 2012a).

Project Operation

The AFC states that exterior lights for project operation would be hooded and directed to minimize glare and light spillage beyond the project site (AES Southland Development 2012b). Low-pressure sodium lamps and non-glare fixtures would be used for the project, and “switched lighting circuits” would be provided for areas not requiring continuous illumination. In response to staff’s data requests on project lighting, the applicant states that the HBEP power block equipment would “require considerably less lighting” compared to the existing power plant with lighting only required on the platforms around the tops of the six HRSGs (AES Southland Development 2012a). The applicant states that because of the more limited and highly shielded lighting of the proposed project compared to the existing plant site, illuminated areas on the project site would be smaller and more subdued compared to existing conditions.

Light and Glare Effects

Project Construction

The applicant has summarized project lighting for construction and commissioning activities, stating that some work would require round-the-clock lighting of the worksite(s). The frequency of nighttime work over the 8-year construction schedule is not known, and the applicant states that the project site could appear as a brightly lit area for limited times during project construction and commissioning. Although lighting of construction worker parking areas is not discussed in the AFC, staff assumes that security lighting of the construction parking areas shown on **VR Figure 18** would be necessary. Although the applicant states that nighttime construction lighting would be task-specific and shielded to the extent feasible, no further details are provided (e.g., a process requiring the project owner to respond to a construction-related lighting complaint). Based on the applicant’s summary of construction lighting, staff concludes that long-term lighting for demolition, construction, and commissioning activities would create a new source of substantial light or glare that could adversely affect nighttime views in the area. Condition of Certification **VIS-2** proposes measures to minimize the potential impacts of long-term lighting for demolition, construction, and commissioning work. Implementation of **VIS-2** would reduce long-term lighting impacts to less than significant.

Project Operation

The applicant briefly described project operations lighting. As shown in **VR Table 1**, visually prominent structures would include six HRGSs and stacks and two ACCs, one for each power block. Although the applicant states that the amount of visible lighting on the site would be significantly decreased compared to current conditions, very little information is provided on project operations lighting. Operation of the HBEP Power Block 1 at the northeast corner of the project site would introduce new lighting sources where there are currently no power generating facilities. Staff concludes that permanent HBEP lighting would create a new source of substantial light or glare that could adversely affect nighttime views in the area. Condition of Certification **VIS-3** is proposed to require preparation and implementation of a comprehensive Lighting Management Plan for the HBEP.

The applicant proposes a construction schedule with a 2-year period between starting construction of the HBEP Power Block 1 (third quarter of 2016) and Power Block 2 (third quarter of 2018), with overlap planned during the last half of 2018. Given the long-term construction schedule and the potential for the Lighting Management Plan to become dated, staff proposes Condition of Certification **VIS-4** requiring preparation and submittal of a letter report on the approved Lighting Management Plan to determine whether updates to the plan are needed (e.g., to implement lighting technology changes).

Implementation of **VIS-3** and **VIS-4** would reduce potential impacts of project operations lighting to less than significant.

The applicant has proposed no measures requiring surface treatments to minimize glare from project structure surfaces. The potential for glare from project structures to adversely affect daytime views in the project area is considered a significant impact of the HBEP. Condition of Certification **VIS-5** is proposed to require preparation and implementation of a Surface Treatment Plan to reduce the effects of glare from project surfaces to less than significant.

Visible Plumes

When a thermal power generation facility is operated at times when the ambient temperature is low and *relative humidity* is high, the warm moisture (water vapor) in the exhaust plume condenses as it mixes with the cooler ambient air, resulting in formation of a visible plume[1]. (This is similar to when the moisture-laden air in a person's breath on a cold day is chilled to the point where the water vapor condenses into lots of tiny droplets of liquid water, forming a visible cloudy fog.) Formation of visible plumes typically occurs on cool, humid days when the outdoor air is at or near *saturation*[2].

Section 5.13.2.3.6 of the AFC, "Water Vapor Plumes," states that power plants like the proposed HBEP produce high velocity, high temperature exhausts that disperse quickly, thereby minimizing the probability that visible plumes would form above the stacks. Using data provided by the Applicant, Energy Commission staff conducted a preliminary assessment of the proposed project's exhaust gas plumes. Based on the HBEP's exhaust gas characteristics and ambient air conditions, staff concluded that conditions would be unlikely to cause formation of visible plumes above the project's exhaust stacks. The HBEP would not include wet cooling towers with evaporative cooling. Instead, the HBEP would use dry cooling (the ACCs) for heat rejection with no possibility of forming water vapor plumes. No impact on visual resources would occur pertaining to visible plumes.

Cumulative Impacts

Section 15130 of the State CEQA Guidelines requires a discussion of cumulative impacts of a project when the project's incremental effect is *cumulatively considerable*. According to State CEQA Guidelines Section 15065(a)(3), "[c]umulatively considerable means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects." Sections 15130 and 15355 of the State CEQA Guidelines both stress cumulative impacts in the context of *closely related* projects and from projects *causing related impacts*. The goal of such an analysis is twofold: first, to determine whether the overall long-term impacts of all such projects would be cumulatively significant; and second, to determine whether the HBEP itself would cause a "cumulatively considerable" (and thus significant) incremental contribution to any such cumulatively significant impacts.

For this analysis, the impacts of cumulative projects (i.e., related projects) on visual resources are limited to those that could combine with the proposed project's visual resources impacts. The geographic scope of the area that could be subject to a cumulative visual effect is limited to the area very near the proposed HBEP. This analysis addresses the incremental effects of the HBEP combined with these projects (see **VR Figure 20**):

- Poseidon Seawater Desalination Project
- Ascon Landfill Remedial Action Plan
- Demolition of HBGS Units 3 and 4
- Demolition of the Plains All American Pipeline Tank Farm

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[1] Relative humidity is the percentage of the amount of water vapor in the air. The colder the air, the less water vapor it can carry.
[2] Saturated air is air containing the maximum amount of water vapor possible at a given temperature.

The City's Poseidon Seawater Desalination Project is planned for construction in the northeast portion of the HBGS site. The City certified the Subsequent Environmental Impact Report (SEIR) and approved the seawater desalination project in 2010. However, the coastal development permit for the project was appealed, and approval of the project by the Coastal Commission is uncertain. If final approval is received for the City's seawater desalination project, its construction schedule could overlap with the proposed construction schedule for the HBEP. Construction of the seawater desalination project would include removal of three 40-foot-tall decommissioned fuel oil storage tanks from the site and construction of multiple buildings and structures ranging from approximately 15 to 35 feet tall. The City's SEIR addresses implementation of design features and aesthetic techniques to improve and enhance visual resources conditions at the desalination project site. Design standards for lighting are also required to avoid creation of a new source of light or glare. Although the SEIR identifies no significant impacts on visual resources for the seawater desalination project, mitigation measures are specified to ensure compliance with the City's design requirements (City of Huntington Beach 2010).

The 38-acre closed Ascon Landfill site on Magnolia Street is within approximately 1,000 feet of Power Block 1 for the proposed HBEP. The Huntington Beach Channel separates the power plant site from the Ascon Landfill. In August 2013, the California Department of Toxic Substances Control (DTSC) released a draft EIR to evaluate the environmental impacts of the Remedial Action Plan (RAP) for the landfill. A previous DTSC study identified a preferred alternative (Alternative 4) that would generally involve partial removal of existing on-site material and installation of an engineered cap that would be topped by a vegetative soil layer (DTSC 2013), and this project is the subject of the August 2013 draft EIR.

The engineered cap over the site would be sloped upward with the southwestern portion (closest to the HBEP site) increased from its existing elevation of approximately 25 feet above msl to approximately 44 feet above msl. An internal access road would surround all sides of the site, and a chain link security fence would be installed along the site perimeter. Earthwork and excavation under the RAP would include removal of the landfill perimeter berms along Magnolia Street and Hamilton Avenue. Removal of mature trees from the berm along Magnolia Street would also be required. No perimeter landscaping is proposed. Construction of the RAP could start in 2015 and would take approximately 1 year to complete. The proposed construction schedule for the RAP could overlap with the proposed demolition and construction of parts of the HBEP in 2015 and 2016.

DTSC's draft EIR identifies project design features to minimize impacts on aesthetic resources from implementing the RAP. Proposed project design features include sloping the site to blend the topography of the capped site with the surrounding area, vegetating the site with grasses and/or other shallow-rooted vegetation, providing ongoing weed abatement and litter control, and setting back the perimeter fence from Magnolia Street and Hamilton Avenue. With implementation of project design features, the draft EIR concludes that no significant impacts on aesthetic resources would occur from construction of the RAP. Staff concludes that implementation of the RAP would not alter the overall visual character of views in the HBEP project area to any noticeable extent.

In May 2001, the Energy Commission adopted its Decision on the *Huntington Beach Generating Station Retool Project* (00-AFC-13) to retool and operate the HBGS Units 3 and 4. Prior to demolition of Units 3 and 4, the project owner will submit a closure plan for staff's review and approval, which will include measures to reduce the impacts of demolition on visual resources to less than significant. Because the existing HBGS Units 3 and 4 are on the HBEP project site, staff assumes that proposed conditions of certification to reduce the construction-related impacts for the HBEP would simultaneously reduce the impacts of demolishing Units 3 and 4 (see Conditions of Certification **VIS-1** and **VIS-2**, below). All construction-related impacts on visual resources will be reduced to less than significant with implementation of visual screening measures.

In November 2012, the Huntington Beach City Council approved the mitigated negative declaration (MND) and coastal development permit for removing three empty, above-ground oil storage tanks and transfer piping from the Plains All American Pipeline property east of the HBEP site (Klemm, pers. comm., 2013). The approved project involves demolition and removal of the tank farm structures from the approximately 40-acre site with no new uses proposed for the site. Each of the three tanks is 40 feet tall and 300 feet in diameter. The MND identified no impacts on visual resources. It is estimated that demolition and grading activities could take 5–6 weeks. The schedule for this work is unknown.

A mix of development in the project area characterizes visual resources conditions. Except for the Huntington Beach Wetlands complex, the project area is mostly developed with urban land uses in a coastal setting. The existing cumulative condition for visual resources in the project area includes the HBGS, which the City identifies as a visual weakness that contributes negatively to the visual quality of the community (see the discussion below under "Compliance with Laws, Ordinances, Regulations, and Standards"). Given the location of the HBEP at the site of existing and former energy and utility facilities, and staff's conclusions (above) that overall visual sensitivity is *moderate to high* (see the analysis under, "Visual Sensitivity for the KOPs," above), the cumulative baseline condition for visual resources impacts is considered significant. The future demolition and removal of the tank farm from the Plains All American Pipeline property will reduce the industrial appearance of the area east of the HBEP site; however, no improvements will be implemented following demolition, and the site will be left vacant and unimproved. The addition of the four cumulative projects reviewed by staff does not change the existing baseline condition for visual resources to a noticeable extent. The proposed HBEP would alter the cumulative baseline by changing the configuration and massing of power plant structures on the site. Although the use and purpose of the power plant site would not change with demolition of the HBGS and construction of the proposed project, staff considers it reasonable to conclude that construction of a highly visible power plant with no visual screening or enhancement would continue to contribute considerably to the cumulatively significant effect for visual resources. Assuming a visual screening plan for the HBEP will be developed and made available to staff, staff will re-evaluate the conclusion for cumulative visual resources impacts in the FSA.

Summary of Project Effects

As described above, criteria for determining the significance of impacts on visual resources are based on the environmental checklist form in Appendix G of the State CEQA Guidelines. This discussion summarizes the effects of the HBEP on visual resources and the corresponding significance criteria for evaluating impacts on visual resources.

Substantial Adverse Effect on a Scenic Vista

Although uninterrupted views of the Pacific Ocean are possible from Huntington State Beach, most landside views in the vicinity of the existing HBGS include built elements typical of coastal development in urbanized areas near the coast. No particular view in the project vicinity has a level of scenic appeal that could distinguish it as a scenic vista; therefore, the proposed project would have no impact relative to this criterion.

Substantially Damage Scenic Resources, Including But Not Limited to Trees, Rock Outcroppings, and Historic Buildings within a State Scenic Highway

Because the PCH is not an officially designated state scenic highway in the region, no impact would occur relative to this criterion.

The General Plan designates the segment of the PCH through its planning area as a major urban scenic corridor. The analysis below under, “Compliance with Laws, Ordinances, Regulations, and Standards,” discusses the proposed HBEP’s consistency with policies addressing protection of scenic corridors under the City’s General Plan.

Substantially Degrade the Existing Visual Character or Quality of the Site and its Surroundings

Staff identifies these visual resources impacts relative to this criterion:

- *Construction-Related Effects* – The proposed HBEP would require the presence and movement of heavy construction equipment and vehicles, large-scale construction and demolition work, and generation of dust over a long-term construction schedule. This visual resources impact includes the HBEP site and two of the proposed off-site construction parking areas. Long-term construction impacts would cause substantial degradation of the existing visual character of the site and its surroundings.
- *KOP 4* – Overall visual sensitivity for KOP 4 is *moderate to high*, and the overall visual change for the proposed HBEP is *moderate to high*. Compared to existing conditions, implementation of the HBEP would substantially degrade the existing visual character of the site and its surroundings for views at or near KOP 4.

- *KOP 5* – Overall visual sensitivity for KOP 5 is *moderate to high*, and the overall visual change for the proposed HBEP is *moderate to high*. Compared to existing conditions, implementation of the HBEP would substantially degrade the existing visual character of the site and its surroundings for views at or near KOP 5.

Create a New Source of Substantial Light or Glare That Would Adversely Affect Daytime or Nighttimes Views in the Area

Staff identifies these visual resources impacts relative to this criterion:

- *Project construction lighting* – The frequency of nighttime work over the long-term construction schedule is unknown; however, the project site could appear as a brightly lit area for limited times during project construction and commissioning. Staff assumes that security lighting of the construction parking areas would be necessary. Staff concludes that long-term lighting for demolition, construction, and commissioning activities would create a new source of substantial light or glare that could adversely affect nighttime views in the area.
- *Project operations lighting* – Although the applicant states that the amount of visible lighting on the site would be significantly decreased compared to current conditions, very little information is provided on project operations lighting. Operation of the HBEP Power Block 1 at the northeast corner of the project site would introduce new lighting sources where there are currently no power generating facilities. Staff concludes that project operations lighting would create a new source of substantial light or glare that could adversely affect nighttime views in the area.
- *Potential daytime glint or glare from project structures* – The potential for glint or glare from project structures to adversely affect daytime views in the project area is considered a potentially significant impact of the HBEP.

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

VR Table 2 (below) summarizes LORS pertaining to protection of visual and aesthetic resources. The full text for the sections, objectives, policies, and ordinances listed in the table is contained in **Appendix VR-3** of this staff assessment, **Applicable Laws Ordinances, Regulations, and Standards**.

The summary of applicable LORS in **VR Table 2** includes several that address minimizing the visual impacts of utilities by requiring landscape and architectural buffers and screens. The Coastal Element of the City's General Plan includes a policy specifically requiring the owners of the electrical generating plant on the PCH to provide adequate buffering and screening measures for any proposal to expand or alter the existing power plant (Policy C 8.4.2 in **VR Table 2**). Goal C 4 of the Coastal Element addresses enhancement and restoration of the Coastal Zone, including a policy to minimize lighting levels. The Urban Design Element of the General Plan identifies the Edison Power Plant as a visual weakness that contributes negatively to the visual quality of the community. (See applicable goals, objectives, and policies under, “Urban Design Element,” in the table below.)

Section 5.13.2.3.1 of the AFC states that the “exteriors of major project equipment would be treated with a neutral gray finish to optimize its visual integration with the surrounding environment” (AES Southland Development 2012b). Staff does not agree with the applicant’s assessment. Painting bulky, angular, industrial-type structures in the same continuous color of flat gray (or another similarly neutral color) is an ineffective method to integrate the proposed HBEP into the coastal environment. Staff refers readers to the simulated views for KOPs 4 and 5 (see **VR Figures 10b** and **12b**), which show the moderate to high level of visual contrast created by the proposed project structures.

Section 5.13.5.1.1 of the AFC cites Section 30251 of the Coastal Act, which states in part: “Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas” (AES Southland Development 2012b). The applicant’s data responses and revised visual simulations for KOPs 1, 4, and 5 refer briefly to a “landscape scheme” that includes extension of the existing 8-foot-tall perimeter wall “around the site’s west, south, and east sides, and planting of large-size palm trees to create immediate visual effects” (AES Southland Development 2013). As shown in **VR Figures 3b** and **10b**, the masonry wall and palm trees would provide little, if any, visual screening of the bulk of the project structures.

The Energy Commission’s Rules of Practice and Procedure for Power Plant Site Certification (Siting Regulations) address agency and staff responsibilities for review of compliance with applicable laws, regulations, standards, and plans (Cal. Code Regs., tit. 20, § 1744). Section 1744 of the Siting Regulations requires each agency responsible for enforcing the applicable mandate to assess the adequacy of the applicant’s proposed compliance measures to determine whether the facility will comply with the mandate. Staff’s responsibility is to assist and coordinate the assessment of the conditions of certification to ensure that all aspects of the facility’s compliance with applicable laws are considered (Cal. Code Regs., tit. 20, § 1744[b]).

In December 2012, City staff submitted a letter commenting on the AFC for the HBEP and assessing the proposed project’s compliance with applicable LORS (Klemm and James, pers. comms., 2012). City staff commented that “the extremely important view of the energy facility from valuable coastal resources requires improvement” based on the many goals and policy statements in the General Plan and the City’s Urban Design Guidelines. City staff agreed with the applicant’s statements in the AFC that the modern components and new facilities under the proposed project would be a “general improvement over the existing facility,” but also states that “[i]t is significant that the four units and two towers are being replaced by two large power blocks and six towers with no additional screening, landscaping, or unique architectural treatment….”

The Coastal Act requires the Coastal Commission to participate in the proceedings for any thermal power plant under the Energy Commission's siting authority that is proposed in the Coastal Zone (Pub. Resources Code § 30413[d]). The Coastal Commission's participation includes preparation and submittal of a written report to the Energy Commission specifying provisions regarding the proposed site and related facilities to meet the objectives of the Coastal Act. The Coastal Commission's report findings must consider conformance of the site with certified LCPs administered by jurisdictions that would be affected by any such development (Pub. Resources Code § 30413[d][5]). The Coastal Commission's report findings must consider "[t]he potential adverse effects that the proposed site and related facilities would have on aesthetic values" (Pub. Resources Code § 30413[d][3]). As of publication of this PSA, the Coastal Commission had not submitted its written report on the proposed HBEP.

Shortly before publication of this PSA, staff was informed that the applicant presented the City with a number of visual enhancement options, which the City used to select two options for presentation at the October meeting of the City Council. Following the City Council vote to approve one of the two options, information on the City's decision will be provided to the Energy Commission. No visual screening proposal has been provided by the applicant or the City as part of the AFC proceeding, and the applicant's compliance with applicable LORS addressing visual screening and enhancement is uncertain.

Section 1744 of the Energy Commission's Siting Regulations states that "[t]he Applicant's proposed compliance measures and each responsible agency's assessment of compliance shall be presented and considered at hearings on the application…" (Cal. Code Regs., tit. 20, § 1744[c]). Assuming the City's selected visual screening plan for the HBEP will be provided to the Energy Commission, it is unknown whether the Coastal Commission will find the plan adequate to satisfy applicable LORS. The Siting Regulations further specify staff's responsibilities: "If the applicant or any responsible agency asserts that an applicable mandate cannot be complied with, the Commission staff shall independently verify the non-compliance, and advise the Commission of its findings in the hearings" (Cal. Code Regs., tit. 20, § 1744[d]). "Comments and recommendations by an interested agency on matters within that agency's jurisdiction shall be given due deference by Commission staff" (Cal. Code Regs., tit. 20, § 1744[e]).

The applicant has not yet proposed preparation and implementation of a visual screening plan for the HBEP, including plans to install and maintain landscape plantings. Without a visual screening plan, the applicant's compliance with applicable LORS addressing visual screening and enhancement is uncertain.

As of publication of this PSA, staff has insufficient information to assess consistency of the proposed project with many of the LORS listed in **VR Table 2**.

Visual Resources Table 2
Proposed Project Consistency with Applicable Visual Resources LORS

LORS Summary Description	Consistency Determination	Basis for Consistency
California Coastal Act of 1976		
Section 30251 Scenic and visual qualities. The scenic and visual qualities of coastal areas shall be considered and protected. Permitted development shall be visually compatible with the character of the area and, where feasible, to restore and enhance visual quality in visually degraded areas.	Consistency may be determined based on conditions of certification that may be proposed in the FSA to screen and enhance public views of the HBEP.	Undetermined
City of Huntington Beach General Plan		
Land Use Element (City of Huntington Beach 1996b)		
Goal LU 4. Achieve and maintain high quality architecture and landscapes. **Objective LU 4.1** and **Policies 4.1.2, 4.1.3,** and **4.1.4**. Promote development of public buildings and sites that convey a high quality visual image. Prepare and submit a landscape plan for development projects subject to discretionary review.	Consistency may be determined based on conditions of certification that may be proposed in the FSA to screen and enhance public views of the HBEP.	Undetermined
Goal LU 13. Achieve development of a mix of uses that support the needs of the City's residents. **Policy LU 13.1.8**. Ensure that public buildings, sites, and infrastructure improvements are compatible in scale, mass, character, and architecture with existing buildings and characteristics prescribed for the district in which they are located.	Refer to the analyses (below) under the goals, policies, and objectives for the Urban Design Element.	The existing HBGS is in the "Edison & Sanitation District" described in the *Urban Design Guidelines* (City of Huntington Beach 2000). Compliance with the goals, policies, and objectives listed below for the Urban Design Element would achieve consistency with the general guidelines for land uses in the district.
Goal LU 14 – Preserve the City's open spaces. **Objective LU 14.1**. Preserve…open spaces for the City's existing and future residents that maintain and protect significant environmental resources, recreational opportunities, and visual relief from development.	Consistency may be determined based on conditions of certification that may be proposed in the FSA to screen and enhance public views of the HBEP from the marshlands (designated Open Space-Conservation).	Undetermined
Urban Design Element (City of Huntington Beach 1996c)		
Goal UD 1. Enhance the visual image of the City of Huntington Beach. **Policy UD 1.2.1**. Require public improvements to enhance the existing setting for all key nodes, and incorporate landscaping to mask major utilities, such as the Edison generating station.	Consistency may be determined based on conditions of certification that may be proposed in the FSA to screen and enhance public views of the HBEP.	Undetermined

Visual Resources Table 2
Proposed Project Consistency with Applicable Visual Resources LORS

LORS Summary Description	Consistency Determination	Basis for Consistency
Goal UD 2. Protect and enhance public coastal views and oceanside character and screen uses that detract from the City's character. **Objective UD 2.1** and **Policy 2.1.1**. Minimize visual impacts of development on public views to the coastal corridor. Require new development be designed to consider coastal views in its massing, height, and site orientation. **Objective UD 2.2** and **Policies 2.2.1, 2.2.4,** and **2.2.5**. Minimize visual impacts of utilities where they are incompatible with surrounding uses by requiring landscape and architectural buffers and screens. Require the review of new or expanded existing utility facilities to ensure no visual impairment of coastal corridors and entry nodes.[3]	Consistency may be determined based on conditions of certification that may be proposed in the FSA to screen and enhance public views of the HBEP. Implementation of **VIS-1** will contribute to achieving consistency during long-term project construction.	Undetermined
Circulation Element (City of Huntington Beach 1996a)		
Goal CE 7. Maintain and enhance the visual quality and scenic views along designated corridors. **Objective CE 7.1** and **Policy 7.1.1**. Enhance existing scenic view corridors, improve and maintain roadways as local scenic highways, and landscape corridors with key entry points. *(See **VR Figure 21** of this staff assessment, which shows the City's scenic corridors and entry nodes.)* **Objective CE 7.2** and **Policy 7.2.3**. Encourage proposed building sites adjacent to a scenic highway include landscape areas to enhance the highway and create a buffer between the site and the highway. **Objective CE 7.3** and **Policies 7.3.1** and **7.3.4**. Protect scenic corridors and blend built features with the natural environment. Require development to include landscaping that is compatible with the visual character of designated scenic corridors. Whenever possible, place and screen utilities to minimize public viewing.	Consistency may be determined based on conditions of certification that may be proposed in the FSA to screen and enhance public views of the HBEP. Implementation of **VIS-1** will contribute to achieving consistency during long-term project construction.	Undetermined

[3] A "node" is defined as a significant focal point, such as a street intersection that acts as a center of movement and activity. The City identifies secondary entry nodes, including Newland Street and Magnolia Street where they intersect with the PCH.

Visual Resources Table 2
Proposed Project Consistency with Applicable Visual Resources LORS

LORS Summary Description	Consistency Determination	Basis for Consistency
Utilities Element (City of Huntington Beach 1996d)		
Goal U 5. Maintain and expand service provision to City residences and businesses. **Policy U 5.1.4**. Require the review and or expansions of existing utility facilities to ensure that such facilities will not visually impair the City's coastal corridors and entry nodes.	Consistency may be determined based on conditions of certification that may be proposed in the FSA to screen and enhance public views of the HBEP. Implementation of **VIS-1** will contribute to achieving consistency during long-term project construction.	Undetermined
Environmental Resources / Conservation Element (City of Huntington Beach 1996e)		
Goal ERC 4. Maintain the visual quality of the City's natural environment. **Objective ERC 4.1** and **Policy 4.1.5**. Enhance and preserve the City's aesthetic resources, including natural areas, beaches, bluffs, and significant public views.	Consistency may be determined based on conditions of certification that may be proposed in the FSA to screen and enhance public views of the HBEP.	Undetermined
Goal ERC 5 – Conserve the natural environment and resources of the community for the long-term benefit and enjoyment of its residents and visitors. **Policy ERC 5.2.3**. Require that energy saving designs and materials be incorporated into the construction of all public buildings, and encourage their use City-wide.	Consistent, with implementation of **VIS-3** and **VIS-4**.	Condition of Certification **VIS-3** requires new lighting fixtures to achieve high energy efficiency for the HBEP facility. **VIS-3** and **VIS-4** require the direct involvement of a certified lighting professional trained to integrate efficient technologies and designs into lighting systems.
Coastal Element (City of Huntington Beach 2011)		
Goal C 4. Preserve, enhance, and restore the aesthetic resources of the coastal zone, including natural areas, beaches, bluffs, and significant public views. **Objective C 4.1** and **Policies 4.1.1** and **4.1.4**. Scenic and visual qualities of the coastal area shall be considered and protected as resources of public importance. Development shall be sited and designed to protect public views along the ocean and scenic coastal areas. Preserve nighttime views by minimizing lighting levels along the shoreline. **Objective C 4.2** and **Policies 4.2.1, 4.2.2**, and **4.2.3**. Protect the Coastal Zone's visual resources through design review and	Consistency with Policy C 4.1.4 to minimize lighting levels will be achieved with implementation of **VIS-2** and **VIS-3**. For policies addressing preservation, enhancement, and restoration of aesthetic resources and landscape screening, consistency may be determined based on conditions of certification	Condition of Certification **VIS-2** requires implementation of measures ensuring that lighting of on-site construction areas and construction worker parking lots minimizes potential night lighting impacts. **VIS-3** requires preparation and implementation of a comprehensive Lighting Management Plan for the HBEP. For policies addressing

Visual Resources Table 2
Proposed Project Consistency with Applicable Visual Resources LORS

LORS Summary Description	Consistency Determination	Basis for Consistency
development. Preserve public views to and from the bluffs, provide adequate landscaping, evaluate project design for visual impact and compatibility, and use landscaping to mask the electrical power plant on the PCH. Require massing, height, and orientation of new development to protect public coastal views. Promote preservation of significant public view corridors to the coastal corridor. **Objective C 4.6** and **Policy 4.6.3**. Enhance visual resources of the Coastal Zone by implementing landscape standards. For new redevelopment, require the preservation of existing mature trees or replace trees at a minimum 2:1 ratio. **Objective C 4.7** and **Policies 4.7.1, 4.7.2, 4.7.5,** and **4.7.8**. Improve the appearance of visually degraded areas in the Coastal Zone with landscaping to screen uses that detract from scenic quality, locating utilities underground when possible, reviewing new or expanded utility facilities to avoid visual impairment of coastal corridors and entry nodes, and requiring landscaping and architectural buffers and screens around utilities.	that may be proposed in the FSA to screen and enhance public views of the HBEP. Views to and from the bluffs would not change with construction of the HBEP. See the analysis above for KOP 7.	preservation, enhancement, and restoration of aesthetic resources and landscape screening, consistency is undetermined.
Goal C 8. Accommodate energy facilities and promote beneficial effects while mitigating potentially adverse impacts. Objective C 8.4 and **Policy 8.4.2**. Encourage the owners of the electrical power plant on the PCH to buffer and screen the power plant from the PCH and Beach Boulevard with landscaping and other means. Require any power plant expansion or alteration proposals to include adequate buffering and screening measures.	Consistency may be determined based on conditions of certification that may be proposed in the FSA to screen and enhance public views of the HBEP.	Undetermined
Huntington Beach Zoning & Subdivision Ordinance		
Title 21 – Base Districts		
Ch. 214, PS Public-Semipublic District; § 214.08 Development Standards. (N) Maximum allowable height of structures in the Coastal Zone shall be reduced to be compatible with the established physical scale of the area and to enhance public visual resources.	Consistency may be determined based on conditions of certification that may be proposed in the FSA to screen and enhance public views of the HBEP.	Undetermined

Visual Resources Table 2
Proposed Project Consistency with Applicable Visual Resources LORS

LORS Summary Description	Consistency Determination	Basis for Consistency
Title 22 – Overlay Districts		
Ch. 221, Coastal Zone Overlay District; § 221.10 Requirements for New Development Adjacent to Resource Protection Area. Development adjacent to any wetland or land zoned Coastal Conservation requires a landscape plan that prohibits planting of invasive plants, encourages low water use, and uses plants that are native to coastal Orange County. Reduce impacts of walls or barriers adjacent to conservation areas by using open fencing/wall designs, landscape screening, or other features. Walls and fences shall use designs to prevent bird strike hazards (e.g., wood, wrought iron, partially-frosted glass).	Magnolia Marsh is part of the wetlands complex that is zoned Coastal Conservation. Consistency may be determined based on conditions of certification that may be proposed in the FSA to screen and enhance public views of the HBEP.	Undetermined
Ch. 221, Coastal Zone Overlay District; § 221.14 Preservation of Visual Resources. Applicants proposing new development shall provide the Director with an evaluation of the project's visual impact. Preservation of public views is required, including views to and from the bluffs, to the shoreline and ocean, and to the wetlands. Preservation of existing mature trees is required to the maximum extent feasible.	Consistency with the requirement to evaluate the visual effects of the proposed project is achieved with preparation of this staff assessment. Consistency with the requirement to preserve visual resources may be determined based on conditions of certification that may be proposed in the FSA to screen and enhance public views of the HBEP.	Undetermined
Ch. 221, Coastal Zone Overlay District; § 221.28 Maximum Height. All rooftop mechanical devices, except for solar panels, shall be set back and screened so that they are not visible.	Consistency may be determined based on conditions of certification that may be proposed in the FSA to screen and enhance public views of the HBEP.	Undetermined
Title 23 – Provisions Applying in All or Several Districts		
Ch. 230, Site Standards; § 230.72 Exceptions to Height Limits. Mechanical appurtenances may exceed the maximum permitted height in the district in which the site is located by no more than 10 feet. The Zoning Administrator may approve greater height with a conditional use permit. Exceptions to height limits in the Coastal Zone may be granted only when public visual resources are preserved and enhanced where feasible.	Consistency may be determined based on conditions of certification that may be proposed in the FSA to screen and enhance public views of the HBEP.	Undetermined

Visual Resources Table 2
Proposed Project Consistency with Applicable Visual Resources LORS

LORS Summary Description	Consistency Determination	Basis for Consistency
Ch. 230, Site Standards; § 230.76 Screening of Mechanical Equipment. Exterior mechanical equipment shall be screened from view on all sides. Screening of the top of equipment may be required by the Director, if necessary to protect views from an R or OS district. A mechanical equipment plan shall be submitted to the Director to ensure that the mechanical equipment is not visible from a street or adjoining lot.	The "Huntington By-The-Sea Mobile Estates and RV Park" on Newland Street adjacent to the HBEP site is in an "R" district; the zoning district is RMP – Residential Manufactured Home Park. Consistency may be determined based on conditions of certification that may be proposed in the FSA to screen and enhance public views of the HBEP.	Undetermined
Ch. 231, Off-Street Parking and Loading Provisions; § 231.18 Design Standards. Parking area lighting shall be energy efficient and designed to prevent glare on adjacent residences. Security lighting shall be provided in public areas and shall be on a time clock or photo sensor system.	Consistent, with implementation of **VIS-2** and **VIS-3**.	Conditions of Certification **VIS-2** and **VIS-3** address minimizing potential night lighting impacts and glare and using occupancy sensors and/or other scheduling or controls technologies to provide adequate light for security and maximize energy savings.
Ch. 232, Landscape Improvements; § 232.02 Applicability. Minimum required site landscaping and planting areas shall be installed and maintained in accord with the standards and requirements of this chapter, including all nonresidential projects.	Consistency may be determined based on conditions of certification that may be proposed in the FSA to screen and enhance public views of the HBEP.	Undetermined
Ch. 232, Landscape Improvements. Section 232.04 General Requirements. Landscape plans prepared by a California State Licensed Landscape Architect shall be submitted for approval to the Public Works and Community Development Departments. Significant changes to approved plans require written approval by City staff and/or officials and the landscape designer. Compliance with the Arboricultural and Landscape Standards and Specifications on file in the Public Works Department is required.	Consistency may be determined based on conditions of certification that may be proposed in the FSA to screen and enhance public views of the HBEP, which may include landscape elements. City staff will be asked to review and comment on the adequacy of any	Undetermined

Visual Resources Table 2
Proposed Project Consistency with Applicable Visual Resources LORS

LORS Summary Description	Consistency Determination	Basis for Consistency
Section 232.06 Materials. Plans shall be harmonious with the architecture and show a recognizable pattern or theme for the overall development. Plants shall be selected for drought tolerance and adaptability to the Huntington Beach environment. Irrigation systems must follow the water efficient landscape requirements of Chapter 14.52 and the Arboricultural Standards and Specifications on file in the Department of Public Works. **Section 232.08 Design Standards**. A minimum of 8 percent of the total net site areas shall be landscaped, or as required by Title 21 or conditions of approval. Tree requirements for non-residential developments shall have one 36-inch box tree for each 45 lineal feet of street frontage planted within the first 15 feet of the setback area adjacent to the street. Specimen palms may be substituted at a ratio of ½ foot brown trunk height for 1 inch of box tree inch required. Landscaped planter areas are required for off-street parking facilities to meet specific standards. **Section 232.10 Irrigation**. All landscaped areas shall have a permanent underground, automated irrigation system to promote healthy plant life.	proposed site enhancement measures.	
Title 24 – Administration		
Ch. 244, Design Review. **Section 244.02 Applicability**. Design review is required for all projects pursuant to any other provision of this Zoning and Subdivision Ordinance and for all projects located within redevelopment areas, specific plans as applicable, areas designated by the City Council, City facilities or projects abutting or adjoining City facilities, projects in or abutting or adjoining OS-PR and OS-S districts, and General Plan primary and secondary entry nodes. **Section 244.06 Scope of Review**. Specifies that the Board shall consider the arrangement and relationship of proposed structures to one another and to other development in the area. Requires the Board to assess the compatibility in scale and aesthetic treatment of the structures with public district areas. The adequacy of proposed landscaping shall be	Consistency may be determined based on conditions of certification that may be proposed in the FSA to screen and enhance public views of the HBEP. City staff will be asked to review and comment on any proposals to enhance public views of the project site.	Undetermined

Visual Resources Table 2
Proposed Project Consistency with Applicable Visual Resources LORS

LORS Summary Description	Consistency Determination	Basis for Consistency
assessed. The Board shall assess whether energy conservation measures have been proposed and the adequacy of such measures. **Section 244.08 Required Plans and Materials**. Plans and materials to fully describe and explain the proposed development shall be submitted as required by the application form or by the Director, as deemed necessary.		
Sources: California Coastal Act is available on the California Coastal Commission website at <http://www.coastal.ca.gov/whoweare.html>. Zoning and Subdivision Ordinance of the City of Huntington Beach is available at: <http://www.huntingtonbeachca.gov/Government/Elected_Officials/city_clerk/Zoning_Code/index.cfm?cross=ture&department=planning&sub=zoning&page=>.		

PROPOSED FINDINGS

1. The California Coastal Act requires that the scenic and visual qualities of coastal areas be considered and protected as a resource of public importance (Pub. Resources Code § 30251). Permitted development must be sited and designed to restore and enhance visual quality in visually degraded areas where feasible.
2. The existing Huntington Beach Generating Station (HBGS) is the most visually prominent, built feature in the project area, and it is identified in the City's General Plan as a visual weakness that contributes negatively to the visual quality of the community.
3. The Coastal Element of the City's General Plan includes a policy requiring the owners of the electrical generating plant on the Pacific Coast Highway (PCH) to provide adequate buffering and screening measures for any proposal to expand or alter the existing power plant.
4. The applicant has not yet proposed any specific or detailed measures to restore and enhance visual quality at the project site.
5. Construction and operation of a new, massive electrical power plant in the Coastal Zone requires implementation of measures to reduce potential impacts on visual resources and ensure compliance with applicable laws, ordinances, regulations, and standards.
6. The long-term schedule for demolition of HBGS structures and construction of the Huntington Beach Energy Project (HBEP) would substantially degrade the existing visual character and quality of the site and its surroundings, resulting in a significant impact on sensitive viewer groups in the project area. Staff finds that this impact is reduced to less than significant with preparation and implementation of a Construction Screening and Site Restoration Plan.

7. Lighting of the project site and structures during demolition, construction, and operation would create new sources of substantial light or glare that could adversely affect daytime and nighttime views in the area. Illumination of the project site at night would cause a significant impact on visual resources unless mitigation measures were implemented to reduce the impact to less than significant. Staff finds that this impact is reduced to less than significant with implementation of conditions of certification to reduce the effects of lighting during project demolition, construction, and operation, including preparation and implementation of a Lighting Management Plan.
8. Key observation point (KOP) 4 represents the view from Magnolia Street near the PCH toward the HBEP site. Staff finds that the proposed project would substantially degrade the existing visual character of the site and its surroundings for views at or near KOP 4. The proposed project would cause a significant visual impact on sensitive viewer groups represented by this KOP.
9. KOP 5 represents the view from the driveway entrance to the "Huntington By-The-Sea Mobile Estates and RV Park." Staff finds that the proposed project would substantially degrade the existing visual character of the site and its surroundings for views at or near KOP 5. The proposed project would cause a significant visual impact on sensitive viewer groups represented by this KOP.
10. The cumulative baseline condition for visual resources impacts in the project area is already considered significant. The proposed HBEP would continue to contribute considerably to the cumulatively significant effect for visual resources.

CONCLUSIONS

Impacts on visual resources were assessed based on the magnitude of the anticipated incremental changes to the visual environment, considering the appropriate baseline conditions (i.e., existing conditions), and the estimated effects of those changes on sensitive viewer groups.

Because of the long-term schedule for the proposed demolition of HBGS structures and construction of the HBEP, staff concludes that demolition, construction, and commissioning activities would substantially degrade the existing visual character and quality of the site and its surroundings. Staff proposes Condition of Certification **VIS-1** requiring preparation and implementation of a Construction Screening and Site Restoration Plan to reduce this impact to less than significant.

Lighting of the project site and structures during demolition, construction, commissioning, and operation would create new sources of substantial light or glare that could adversely affect daytime and nighttime views in the area. Staff proposes implementing Conditions of Certification **VIS-2**, **VIS-3**, and **VIS-4** to reduce the effects of lighting on visual resources, including preparation and implementation of a Lighting Management Plan. Condition of Certification **VIS-5** is proposed to require preparation and implementation of a Surface Treatment Plan to reduce the effects of daytime glare from project surfaces to less than significant.

Section 30251 of the California Coastal Act requires that the scenic and visual qualities of coastal areas be considered and protected as a resource of public importance. Permitted development must be sited and designed to restore and enhance visual quality in visually degraded areas where feasible. However, the applicant has not yet proposed any specific, detailed, or enforceable measures to restore and enhance visual quality at the project site. Without a visual screening and enhancement plan, staff has insufficient information to assess consistency of the proposed project with many LORS requiring visual screening of major utilities, including the Edison Power Plant. A conceptual visual screening plan would also be necessary to determine the extent to which significant visual resources impacts could be reduced for KOP 4 and KOP 5.

PROPOSED CONDITIONS OF CERTIFICATION

VIS-1 **Long-term Visual Screening and Site Restoration – Project Demolition, Construction, and Commissioning.** Prior to the start of site mobilization, the project owner shall prepare and implement a Construction Screening and Site Restoration Plan describing methods and materials that will be used to screen project construction and parking areas and restore areas where ground disturbance occurred during construction.

To minimize the visual impacts of project construction, the project owner shall install and maintain construction screening fencing along the perimeter of the project site for all areas that could be visible from public use areas, including the wetland along the southeast site boundary, the west side of the project site on Newland Street, and the southwest side of the site along the Huntington Beach Wetlands Conservancy property adjacent to the Pacific Coast Highway (PCH). The screening fencing for the power plant site shall be no less than 12 feet tall.

Screening fencing shall be installed to visually screen the open lots that will be used for parking on Newland Street across from the project site and along the PCH at Beach Boulevard. The screening fencing for the parking lots shall be no less than 8 feet tall.

The Construction Screening and Site Restoration Plan shall provide images showing options for screening materials; examples shall include fencing materials in unobtrusive shades of green or brown as well as printed decorative designs. Possible options include knitted polyethylene material, bottom-locking fence slats with chain link fencing, pre-printed mesh fabric, or printable mesh vinyl. All screening fencing shall be well maintained and repaired or replaced as necessary for the duration of project demolition, construction, and commissioning.

When construction is finished, all evidence of construction activities shall be removed, including ground disturbance at staging and storage areas, and restored to its original or better condition. Any vegetation removed during construction shall be replaced in kind at a 1:1 ratio. The Construction

Screening and Site Restoration Plan shall describe the methods and schedule for the restoration work to occur.

The Construction Screening and Site Restoration Plan shall be submitted to the Compliance Project Manager (CPM), the Energy Project Manager for the City of Huntington Beach, and the Executive Director of the Coastal Commission for simultaneous review and comment. Any comments on the plan from the City and the Coastal Commission shall be provided to the CPM. The project owner shall not purchase or order any materials for screening fencing until written approval of the final plan is received from the CPM. Modifications to the Construction Screening and Site Restoration Plan are prohibited without the CPM's approval.

Verification: At least 60 calendar days before the start of site mobilization, the project owner shall submit a Construction Screening and Site Restoration Plan to the CPM, the Energy Project Manager for the City of Huntington Beach, and the Executive Director of the Coastal Commission for simultaneous review and comment. The project owner shall provide the CPM with a copy of the transmittal letters submitted to the City and the Coastal Commission requesting those agencies' respective reviews of the Construction Screening and Site Restoration Plan.

If the CPM determines that the plan requires revision, the project owner shall provide a plan with the specified revision(s) for review and approval by the CPM. A copy of the revised plan shall be provided to the City's Energy Project Manager and the Executive Director of the Coastal Commission. No work to implement the Construction Screening and Site Restoration Plan shall begin until final plan approval is received from the CPM.

The project owner shall install all construction screening and parking area fencing before the start of ground disturbance at the project site. The project owner shall notify the CPM within 7 calendar days of installing the screening fencing that it is ready for inspection.

The project owner shall report any work required to repair or replace temporary screening fencing in the Monthly Compliance Report for the project.

The project owner shall complete site restoration within 60 calendar days of completing construction of the HBEP power blocks and buildings, including demolition of HBGS Units 1 and 2. The project owner shall notify the CPM within 7 calendar days of completing site restoration that restored areas are ready for inspection.

VIS-2 **Long-term Lighting – Project Demolition, Construction, and Commissioning.** Consistent with applicable worker safety regulations, the project owner shall ensure that lighting of on-site construction areas and construction worker parking lots minimizes potential night lighting impacts by implementing the following measures:

- All fixed-position lighting shall be hooded and shielded to direct light downward and toward the construction area to be illuminated to prevent illumination of the night sky and minimize light trespass (i.e., direct light extending beyond the boundaries of the parking lots and construction sites, including any security-related boundaries).

- Lighting of any tall construction equipment (e.g., scaffolding, derrick cranes, etc.) shall be directed toward areas requiring illumination and shielded to the maximum extent practicable.
- Task-specific lighting shall be used to the maximum extent practicable.
- Wherever and whenever feasible, lighting shall be kept off when not in use and motion sensors shall be used to the maximum extent practicable.
- The Compliance Project Manager (CPM) shall be notified of any construction-related lighting complaints. Complaints shall be documented using a form in the format shown in **Attachment 1**, and completed forms shall record resolution of each complaint. A copy of each completed complaint form shall be provided to the CPM. Records of lighting complaints shall also be kept in the compliance file at the project site.

<u>Verification:</u> Within 7 calendar days after the first use of fixed-position parking area and construction lighting for major HBEP construction milestones, the project owner shall notify the CPM that the lighting is ready for inspection. Verification is to be repeated for these three construction milestones:

- demolition of HBGS Unit 5 and east fuel oil tank and construction of Power Block 1,
- construction of Power Block 2, and
- demolition of HBGS Units 1 and 2 and construction of Buildings 33 and 34.

If the CPM determines that modifications to the lighting are needed for any construction milestone, within 14 calendar days of receiving that notification, the project owner shall correct the lighting and notify the CPM that modifications have been completed.

Within 48 hours of receiving a lighting complaint for any construction activity, the project owner shall provide to the CPM a copy of the complaint report and resolution form, including a schedule for implementing corrective measures to resolve the complaint.

The project owner shall report any lighting complaints and document their resolution in the Monthly Compliance Report for the project, accompanied by copies of completed complaint report and resolution forms for that month.

VIS-3 **Lighting Management Plan – Project Operation.** Prior to commercial operation of the HBEP Power Block 1, the project owner shall prepare and implement a comprehensive Lighting Management Plan for the HBEP.

Consistent with applicable worker safety regulations, the project owner shall ensure the design, installation, and maintenance of all permanent exterior lighting such that light sources are not directly visible from areas beyond the project site, reflected glare is avoided, and night lighting impacts are minimized or avoided to the maximum extent feasible. All lighting fixtures shall be selected to achieve high energy efficiency for the HBEP facility.

The project owner shall meet these requirements for permanent project lighting:

- The Lighting Management Plan shall be prepared with the direct involvement of a certified lighting professional trained to integrate efficient technologies and designs into lighting systems.
- Exterior lights shall be hooded and shielded and directed downward or toward the area to be illuminated to prevent obtrusive spill light (i.e., light trespass) beyond the project site.
- Exterior lighting shall be designed to minimize backscatter to the night sky to the maximum extent feasible.
- Energy efficient lighting products and systems shall be used for all permanent new lighting installations. Smart bi-level exterior lighting using high efficiency directional LED fixtures shall be used as appropriate for exterior installations. The lighting system shall work in conjunction with occupancy sensors, photo sensors, wireless controls, and/or other scheduling or controls technologies to provide adequate light for security and maximize energy savings.
- Lighting fixtures shall be kept in good working order and continuously maintained according to the original design standards.
- The Compliance Project Manager (CPM) shall be notified of any complaints about permanent lighting at the project site. Complaints shall be documented using a form in the format shown in **Attachment 1**, and completed forms shall record resolution of each complaint. A copy of each completed complaint form shall be provided to the CPM. Records of lighting complaints shall also be kept in the compliance file at the project site.

The project owner shall meet these plan submittal and review requirements:

- The comprehensive Lighting Management Plan shall be submitted to the CPM, the Energy Project Manager for the City of Huntington Beach, and the Executive Director of the Coastal Commission for simultaneous review and comment. Any comments on the plan from the City and the Coastal Commission shall be provided to the CPM.
- The project owner shall not purchase or order any lighting fixtures or apparatus until written approval of the final plan is received from the CPM. Modifications to the Lighting Management Plan are prohibited without the CPM's approval. Installation of lighting must be completed by the start of commercial operation of Power Block 1.

Verification: At least 90 calendar days before ordering any permanent lighting equipment for Power Block 1 and related facilities and structures, the project owner shall submit a comprehensive Lighting Management Plan to the CPM, the Energy Project Manager for the City, and the Executive Director of the Coastal Commission for simultaneous review and comment. The project owner shall provide the CPM with a copy of the transmittal letters submitted to the City and the Coastal Commission requesting those agencies' respective reviews of the Lighting Management Plan.

If the CPM determines that the plan requires revision, the project owner shall provide a plan with the specified revision(s) for review and approval by the CPM. A copy of the revised plan shall be provided to the City's Energy Project Manager and the Executive Director of the Coastal Commission. No work to implement the plan (e.g., purchasing of fixtures) shall begin until final plan approval is received from the CPM.

Prior to the start of commercial operation of Power Block 1, the project owner shall notify the CPM that installation of permanent lighting for Power Block 1 has been completed and that the lighting is ready for inspection. If the CPM notifies the project owner that modifications to the lighting system are required, within 30 days of receiving that notification, the project owner shall implement all specified changes and notify the CPM that the modified lighting system(s) is ready for inspection.

Within 48 hours of receiving a complaint about permanent project lighting, the project owner shall provide to the CPM a copy of the complaint report and resolution form, including a schedule for implementing corrective measures to resolve the complaint.

The project owner shall report any complaints about permanent lighting and document their resolution in the Annual Compliance Report for the project, accompanied by copies of completed complaint report and resolution forms for that year.

VIS-4 **Lighting Management Plan, Review and Letter Report – Project Operation.** Prior to commercial operation of the HBEP Power Block 2, the project owner shall conduct a full review of the approved Lighting Management Plan to determine whether updates to the plan are needed (e.g., to implement lighting technology changes). Review of the plan shall include preparation of a letter report summarizing conclusions and recommendations for the lighting plan. The plan review shall be conducted with the direct involvement of a certified lighting professional trained to integrate efficient technologies and designs into lighting systems.

The plan review and letter report shall be submitted to the Energy Project Manager for the City of Huntington Beach and the Compliance Project Manager (CPM) for simultaneous review and comment. If City staff submits comments on the letter report, a copy of those comments shall be provided to the CPM.

The project owner shall not purchase or order any permanent lighting for Power Block 2 or new buildings (including administrative or maintenance buildings or warehouses) until written approval of the plan review and letter report is received from the CPM. Installation of lighting must be completed by the start of commercial operation of Power Block 2.

Verification: At least 60 calendar days before ordering any permanent lighting for Power Block 2 and other buildings and structures, the project owner shall submit the plan review and letter report to the Energy Project Manager for the City and the CPM for simultaneous review and comment. The project owner shall provide the CPM with a copy of the transmittal letter submitted to the City of Huntington Beach requesting the Energy Project Manager's review of the letter report. No work to purchase or install lighting fixtures shall begin until final approval is received from the CPM.

Prior to the start of commercial operation of Power Block 2, the project owner shall notify the CPM that installation of permanent lighting has been completed and that the lighting is ready for inspection. If the CPM notifies the project owner that modifications to the lighting system are required, within 30 days of receiving that notification, the project owner shall implement all specified changes and notify the CPM that the modified lighting system(s) is ready for inspection.

VIS-5 **Surface Treatment of Project Structures and Buildings.** Prior to commercial operation of the HBEP Power Block 1, the project owner shall prepare and implement a Surface Treatment Plan addressing treatment of the surfaces of all project structures and buildings visible to the public such that proposed colors and finishes (1) minimize visual intrusion and reduce contrast by blending with the existing visual environment, (2) avoid creating new sources of substantial glint and glare, and (3) are consistent with all applicable laws, ordinances, regulations, and standards.

The monopoles for the on-site 230-kV transmission line shall be constructed using self-weathering steel to blend with the environment to the greatest extent feasible, and the finish shall appear as a matte patina. No galvanizing process shall be used that produces a reflective or shiny metallic finish. Unpainted exposed lagging and surfaces of steel structures that are visible to the public shall be embossed or otherwise treated to reduce glare.

The Surface Treatment Plan shall include, at a minimum, the following elements:

- Description of the overall rationale for the proposed surface treatments, including selection of the proposed colors and finishes.
- Discussion of proposed opportunities and options for using color to enhance design quality.
- Inventory of major project structures and buildings specifying the proposed color palette and finishes. The inventory shall specify height, length, and width or diameter for each major structure and building, and elevation views shall be included in the plan with project structures clearly identified.

- Color brochures, color chips, and or physical samples showing each proposed color and finish. Electronic text files showing proposed colors may not be submitted in place of original samples. Colors must be identified by vendor, name, and number, or according to a universal designation system.
- Electronic files and a set of print copies of 11-inch by 17-inch color visual simulations at life size-scale showing the surface treatment proposed for project structures. The visual simulations for key observation point (KOP) 4 and KOP 5 shall be used to prepare images showing the completed surface treatment plan.
- Schedule for completing the surface treatments.
- Procedure to ensure proper surface treatment maintenance for the life of the project.

The Surface Treatment Plan shall be submitted to the Compliance Project Manager (CPM), the Energy Project Manager for the City of Huntington Beach, and the Executive Director of the Coastal Commission for simultaneous review and comment. Any comments on the plan from the City and the Coastal Commission shall be provided to the CPM. The project owner shall not submit instructions for colors and finishes to manufacturers or vendors of project structures, or perform final field treatment on any structures, until written approval of the final plan is received from the CPM. Modifications to the Surface Treatment Plan are prohibited without the CPM's approval.

Verification: At least 90 calendar days before submitting instructions for colors and other surface treatments to manufacturers or vendors of project structures, and/or ordering prefabricated project structures, the project owner shall submit the Surface Treatment Plan to the CPM, the Energy Project Manager for the City, and the Executive Director of the Coastal Commission for simultaneous review and comment. The project owner shall provide the CPM with a copy of the transmittal letters submitted to the City and the Coastal Commission requesting those agencies' respective reviews of the Surface Treatment Plan.

If the CPM determines that the plan requires revision, the project owner shall provide a plan with the specified revision(s) for review and approval by the CPM. A copy of the revised plan shall be provided to the City's Energy Project Manager and the Executive Director of the Coastal Commission. No work to implement the Surface Treatment Plan shall begin until final plan approval is received from the CPM.

Prior to the start of commercial operation of Power Block 1, the project owner shall notify the CPM that surface treatments of all publicly visible structures and buildings identified in the Surface Treatment Plan have been completed and that the facilities are ready for inspection. The project owner shall obtain written confirmation from the CPM that the project complies with the Surface Treatment Plan.

The project owner shall provide a status report regarding surface treatment maintenance in the Annual Compliance Report for the project. At a minimum, the report shall specify:

- condition of the surfaces of all structures at the power plant site,
- major maintenance activities that occurred during the reporting year, and
- a schedule for major maintenance activities for the next year.

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VISUAL RESOURCES APPENDIX-1
VISUAL RESOURCES TERMS, DEFINITIONS, AND ANALYSIS METHOD

This appendix is divided into two main sections. The first section defines key terms and describes the method used by Energy Commission staff (staff) to evaluate effects of a project on visual resources. The second section describes the process to evaluate effects of publicly visible water vapor plumes on visual resources.

Staff conducted a preliminary analysis of the proposed project's exhaust gas characteristics and ambient air conditions and determined that conditions would be unlikely to cause formation of visible plumes above the project's exhaust stacks. Therefore, the section of this appendix pertaining to visible plumes is not applicable to the proposed project.

KEY TERMS AND ANALYSIS METHOD

VISUAL SPHERE OF INFLUENCE AND DISTANCE ZONES

The *visual sphere of influence* (VSOI) depicts the area within which the proposed project could cause significant impacts on visual resources. The extent of the VSOI will vary depending on the project setting, topography, and the presence or absence of natural or built screening, and it must be determined on a case-by-case basis. For projects in urban settings, visibility of a project site may be limited to specific vantage points in the VSOI. For projects in relatively open areas, a project site may be visible throughout most of the VSOI.

A VSOI boundary may be refined to account for local viewing conditions and topographic screening based on computer *viewshed* analysis and mapping, which is a useful way to determine project visibility and to communicate that information to others. A viewshed is the surface area visible from a given viewpoint or series of viewpoints. It is also the area from which that viewpoint or series of viewpoints may be seen. At a basic level, a viewshed is a plan view or map of areas with an unobstructed sightline to a single observer viewpoint (Federal Highway Administration 1990).

The VSOI may be mapped up to a distance of approximately 5 miles from a project site. At the limits of the VSOI, distant background features may blend together such that they would not be especially discernible to the viewer.

Visual resource management guidelines and methods established by federal agencies are often adapted and used by staff to evaluate the impacts of a project on visual resources. The visual management system of the U.S. Forest Service uses distance zones to describe parts of a characteristic landscape that is subject to inventory and evaluation (Bacon 1979). The Federal Highway Administration (FHWA) uses similar descriptions for distance zones (FHWA 1990). Staff includes a discussion of distance zones to describe views of the project site from parts of the VSOI, which are described as follows:

- **Foreground.** This zone will usually be limited to areas within one-quarter to one-half mile of the observer, but must be determined on a case-by-case basis as should any distance zoning. The limit of this zone is based on distances at which details can be perceived. For example, the viewer may see the texture and form of individual plants or tree boughs. Intensity of color and its value will be at a maximum level.
- **Middleground.** This zone may extend from the foreground zone to 3 to 5 miles from the observer. Texture is generally characterized by masses of trees in stands of uniform tree cover. Parts of the landscape may be seen to join together; hills become a range or trees appear as a forest. Individual tree forms are usually only discernible in very open or sparse stands.
- **Background.** This zone may extend from the middleground zone to infinity. The surfaces of land forms lose detail distinctions, and the emphasis is on the outline or edge of the land forms. The texture in stands of uniform tree cover is generally very weak or nonexistent. In open or sparse timber stands, texture is seen as groups or patterns of trees. Atmospheric haze may diminish colors, soften features, and reduce contrast in background views.

Visual elements closer to the viewer will be in the foreground or middleground. Visual elements at the limits of the project VSOI will generally be those that appear in the background.

VISUAL ABSORPTION CAPABILITY

Visual absorption capability (VAC) provides an additional perspective on the landscape and its capacity to visually withstand or absorb changes from a project. VAC is an estimate or measure of the capacity of a landscape to absorb visual alterations without significantly affecting visual character (Bacon 1979). High VAC may be associated with varied, undulating landforms and varied vegetation canopy. Low VAC may be associated with a uniform landscape, an even tree canopy, and steep slopes. (As the upward slope increases, a greater area of land becomes directly visible and any intervening vegetation loses the potential to screen the activity.)

SELECTION OF KEY OBSERVATION POINTS

Sensitive viewing areas are identified and inventoried in the VSOI for a project where project structures and facilities could be visible to the public. A list of sensitive viewing areas could include several types of uses:

- residential;
- recreational, including wildlife areas, parks, visitor centers, hiking trails, and other recreation areas;
- travel routes, including major roads or highways and designated scenic roads; and
- tourist destinations, including historic landmarks and other protected natural and built features in the landscape.

Refinement of the visual analysis for a project involves identifying critical viewpoints, or key observation points (KOPs). KOPs are selected to represent the most critical viewpoints from off-site locations where a project would be visible to the public. Because it is infeasible to analyze all viewpoints, KOPs are selected that would most clearly display the visual effects of the proposed project. A KOP may also represent a primary viewer group(s) (e.g., motorists on a highway in the project area) that could potentially be affected by a project.

Following selection of the KOPs, photographs are taken of the project site to show existing conditions from the KOPs. The existing condition (baseline) photographs taken from the selected KOPs are used to prepare representative visual simulations of the proposed project or specific project feature. The simulations portray the relative scale and extent of the project. The photograph of the existing condition and the visual simulation (proposed condition) are reviewed for each KOP to determine the potential effects of a project on visual resources.

PROCESS TO EVALUATE KEY OBSERVATION POINTS

VISUAL SENSITIVITY (EXISTING CONDITION)

Steps to evaluate the overall visual sensitivity for each KOP involve consideration of several key factors: *visual quality, viewer concern, visibility, number of viewers,* and *duration of view*. In a project analysis, the rating scale ranges from low to high for each factor. These factors are also used to convey the overall scenic value of the view from each representative KOP. The five factors are described below. (**Diagram 1** [below] illustrates the process to evaluate the KOPs and determine impact significance.)

Visual Quality

Visual quality is an expression of the visual impression or appeal of a given landscape and the associated public value attributed to the visual resource. The visual quality of an area is composed of visual or scenic resources, which are those physical features that make up the visible landscape, including land, water, vegetation, and the built environment (e.g., buildings, roadways, irrigation canals, and other structures). Scenic resources that compose scenic views and sites are generally valued for their aesthetic appearance. Using staff's visual resources analysis method, visual quality is generally rated from low to high.

Memorable or visually powerful landscapes are generally rated high when the landscape components combine in striking or distinctive visual patterns. Landscapes with high visual quality are visually coherent and harmonious when each element is considered as part of the whole. The landscapes are free from encroaching elements and thus retain their visual integrity. Landscapes rated low are often dominated by visually discordant built elements. **Table 1** describes a set of ratings associated with an assessment of visual quality.

Table 1
Landscape Scenic Quality Scale

Rating	Description
Outstanding Visual Quality	This rating describes landscapes with exceptionally high visual quality. These landscapes are often significant regionally and/or nationally, and they usually contain exceptional natural or cultural features that contribute to this rating. They might be described as “picture-postcard” landscapes. People are attracted to these landscapes to view them. These landscapes are often managed in a manner to ensure preservation of the inherent qualities of the landscape.
High Visual Quality	Landscapes with high visual quality may contain cultural or natural features in the landscape that attest to their value. These landscapes often contain visually interesting spaces and elements that are arranged in ways that make them particularly pleasant places to be. Areas with high visual quality often provide recreational opportunities where the visual experience is important. These landscapes are often managed to emphasize preservation of the inherent qualities of the landscape.
Moderately High Visual Quality	These landscapes have above average scenic value but do not possess all of the qualities associated with places that are rated high. The scenic value of these landscapes may be lower due to the less interesting arrangement of landscape elements. These landscapes may have recreational potential, and visual quality is an important management concern.
Moderate Visual Quality	These landscapes have average scenic value and are not especially memorable. They usually lack noteworthy cultural or natural features. These landscapes may have considerable recreational potential and visual quality is a management consideration.
Moderately Low Visual Quality	These landscapes have below average scenic value. They may contain visually discordant built elements, but the landscape is not dominated by these features. They often provide little visual interest and lack spaces that people will perceive as inviting. Recreational activities may occur in areas with below average scenic value, but the visual experience for recreationists is less important in these areas. Management concerns for visual quality may be limited to minimizing the adverse visual impacts of resource management activities or projects.
Low Visual Quality	Landscapes with low scenic value may be dominated by visually discordant built elements. They do not include places that people will find inviting, and lack attributes that make areas with higher quality views memorable and visually interesting. These landscapes often have little recreational potential. Management concerns for visual quality may either address rehabilitation of visually discordant built elements or are limited to minimizing the adverse visual impacts of resource management activities or projects.
Source: Adapted from Buhyoff et al., 1994	

Viewer Concern

Viewer concern represents the estimated reaction of a viewer or viewer group to visible changes in the view. Viewer concern will vary depending on the characteristics and preferences of the viewer group. An assessment of viewer concern can be made based on the extent of the public's concern for a particular landscape or for scenic quality in general. Existing discordant elements in the landscape may temper viewer concern.

Viewer concern for homeowners or other local residents is expected to be high for views near their homes. Viewers engaging in recreational activities and enjoying scenic surroundings are generally expected to be highly concerned about potential degradation of the existing visual quality and character of their views.

Viewer activity is an identifying characteristic of viewer groups (FHWA 1990). Commuting in heavy traffic can distract an observer from many aspects of the visual environment; therefore, viewer concern tends to be lower for views seen by people driving to and from work or as part of their work. Employees, managers, and patrons of businesses may have extended and repeated views of their surroundings on a daily basis. This viewer group may have lower expectations for visual elements in the VSOI than residents and recreationists.

The viewer concern of motorists generally depends on when and where travel occurs, the angle of view, the view distance, and the frequency of travel of the motorist in a particular area. As the observer's speed increases, the sharpness of lateral vision declines, and the observer tends to focus along the line of travel. It is assumed that motorists on freeway systems during periods of free flow travel have a low to moderate viewer concern. Daily commuters using inner city freeways in heavy traffic are primarily focused on traffic and roadway conditions along the travel corridor. Commuters traveling at normal freeway speeds are generally more aware of views from the freeway. Motorists driving for pleasure are expected to have a higher concern for view. Motorists who are local residents and/or business owners may have a higher viewer concern due to their personal investment in the area and greater familiarity with the local environment.

In urban and semi-rural settings, individual viewers are likely to include employees and managers working in offices and commercial and industrial businesses. In rural and semi-rural areas, individual viewers may include people employed in agricultural, industrial, and commercial businesses. For viewers whose focus is on their work and daily pursuits, viewer concern is generally expected to be low to moderate. However, this rating will vary depending on the existing visual quality of the landscape and built environment.

Scenic roadways, cultural features, or other areas identified in adopted land use planning documents are subject to protection. The scenic qualities of protected resources are recognized for their value to the public, and the expectation of viewers is that views of protected resources will be preserved.

Visibility

An assessment of visibility addresses how well the project site or feature can be seen from a particular location. The degree of visibility generally depends on the angle or direction of view; extent of visual screening provided by built and/or natural elements; topography; and the distance between the object (i.e., the project site) and existing homes, streets, or parks. In this sense, visibility is determined by considering any and all obstructions that may be in the sightline, including trees and other vegetation, buildings, hills, and transmission poles or towers.

Number of Viewers

This is an estimate of the number of viewers who may see the project site or feature. The estimate is based on the number of residences, the average traffic volume on local roads and highways, and the number of recreational users per day (e.g., the number of people participating in any recreational activity during a 24-hour period). Traffic volume is based on data such as average daily vehicle trips (ADT) or annual average daily vehicle trips (AADT).

For recreational users, the number of viewers is closely tied to visual quality and viewer concern. For recreationists engaged in activities where visual quality is on the higher end of the scale, the number of viewers is carefully considered in the visual assessment. For example, a recreational area in an area with a high visual quality rating may receive a higher rating overall regardless of the number of viewers. For example, a visual change at a national park is generally more important than a visual change near a large sports stadium.

Table 2 shows ratings based on estimated numbers of viewers. Variations in viewer preferences and existing visual quality will influence these ratings.

Table 2
Approximate Number of Viewers By Viewer Category and Corresponding Rating

Residential (number of residences	Recreationists (number of people per day)	Motorists (number of motor vehicles per day)	Rating
Over 100	Over 200	Over 10,000	High
50–100	100–200	5,000–10,000	Moderate to High
20–50	50–100	2,500–5,000	Moderate
5–20	25–50	500–2,500	Low to Moderate
2–5	10–25	125–500	Low
Source: Energy Commission staff			

Duration of View

Duration of view is the estimated length of time a project site is viewed by a person or group of people. The importance of view duration varies depending on the activities of the viewers. Duration of view is generally less of a concern when the viewer only briefly glimpses the visible feature or site. However, if the site is subject to viewing for a longer period, as from a scenic overlook, then duration of view is a factor of greater importance. Residential viewers typically have the longest duration of view. A resident with a direct view of a project site might have views lasting for extended periods depending on the orientation of the residence and the extent of visual screening.

For motorists, the duration of view depends on the speed of travel, view distance, and angle of observation. For a motorist traveling at 60 miles per hour on a highway with a direct view of a project site, and where the initial point of visibility is approximately 1 mile away, the viewer might see the site for a continuous 60-second period.

The duration of view for recreationists will vary depending on whether the recreational activity is *active* or *passive*. Active recreation involves direct participation in a sport or play activity, which typically requires the use of an organized space (e.g., off-road bike trails or a team sports field). A view of a proposed project by people observing or engaging in active recreation is estimated to be of short duration. People engaging in recreational activities under these conditions are likely to be focused on the sport rather than the aesthetics of the environment.

Passive recreation often involves low impact activities or observation and does not require use of an organized play or sports area. Viewers are more closely associated with the surrounding physical environment where the activity takes place. Typical activities include climbing, hiking, wildlife observation, fishing, and picnicking. A view of a proposed project by an individual engaged in passive recreation is estimated to be of longer duration than for someone participating in active recreation.

Table 3 provides a baseline to determine the ratings associated with view duration. As with number of viewers, variations in viewer preferences and existing visual quality will influence the relative importance of the ratings for duration of view.

Table 3
Approximate Duration of View and Corresponding Rating

Approximate Duration of View	Rating
Longer than 2 minutes	High (extended period of time)
1–2 minutes	Moderate to High
20–60 seconds	Moderate (mid-length period of time)
10–20 seconds	Low to Moderate
Less than 10 seconds	Low (brief period of time)
Source: Energy Commission staff	

Overall Viewer Exposure

Overall viewer exposure is based on *visibility*, *number of viewers*, and *duration of view*. These three factors are generally given equal weight in determining overall viewer exposure. However, additional weight is given to any factor with an extreme value. For example, if a project's visibility is very limited because it would be almost entirely screened from public view, staff gives a lower value to overall viewer exposure.

Overall Visual Sensitivity

Overall visual sensitivity is based on *visual quality*, *viewer concern*, and *overall viewer exposure*. These three factors are generally given equal weight in determining the level of overall visual sensitivity.

VISUAL CHANGE (PROPOSED CONDITION)

The visual change for each KOP is described using the terms *contrast*, *dominance*, and *view blockage*. The scale for rating the visual change ranges from low to high for each factor. The three factors used to evaluate visual change are described below.

Contrast

The degree to which a project could affect the visual quality of a landscape generally depends on the visual contrast created between a project and the existing landscape (U.S. Bureau of Land Management 1986 and 2012). The basic design elements of form, line, color, and texture are used for this comparison and to describe the visual contrast created by a project:

- **Form.** Contrast in form results from changes in the shape and mass of landforms or structures. The degree of change depends on how dissimilar the introduced forms are to those that exist in the landscape.
- **Line.** Contrasts in line results from changes in edge types and interruption or introduction of edges, bands, and silhouette lines. New lines may differ in their subelements (e.g., boldness, complexity, and orientation) from existing lines.
- **Color.** Changes in value, or a gradation or variety of a color (hue) tend to create the greatest contrast. Other factors such as saturation of a color, reflectivity, color temperature, may also increase the contrast.
- **Texture.** Noticeable contrast in texture usually stems from differences in the grain, density, and internal contrast. Other factors such as irregularity and directional patterns of texture may affect the rating.

Projects designed to repeat forms, lines, colors, and textures as those present in the existing landscape will generally be less noticeable. (See also the discussion above under "Visual Absorption Capability.") **Table 4** provides a baseline for the degree of contrast rating.

Table 4
Degree of Contrast and Corresponding Rating

<table>
<tr><th>Criteria</th><th>Rating</th></tr>
<tr><td rowspan="2">The element contrast demands attention, will not be overlooked, and is dominant in the landscape.</td><td>High (strong)</td></tr>
<tr><td>Moderate to High</td></tr>
<tr><td>The element contrast begins to attract attention and begins to dominate the characteristic landscape.</td><td>Moderate</td></tr>
</table>

Table 4
Degree of Contrast and Corresponding Rating

Criteria	Rating
The element contrast can be seen but does not attract attention.	Low to Moderate (weak)
	Low
The element contrast is not visible or perceived.	None
Source: Adapted from U.S. Bureau of Land Management 1986	

Dominance

Dominance is a measure of (a) the proportion of the total field of view that the proposed feature occupies, (b) a proposed feature's apparent size relative to other visible landscape features, and (c) the conspicuousness of the proposed feature due to its location in the view. Also, forms that are bold, regular, solid, or vertical will tend to dominate the landscape.

A proposed feature's level of dominance may be lower in a panoramic setting than in an enclosed setting with a focus on the feature itself. A feature's level of dominance is higher if it is (a) near the center of the view, (b) elevated relative to the viewer, or (c) has the sky as a backdrop. As the distance between a viewer and a feature increases, the feature's apparent size decreases and its dominance decreases as a consequence. The level of dominance is rated from low (subordinate) to high (dominant).

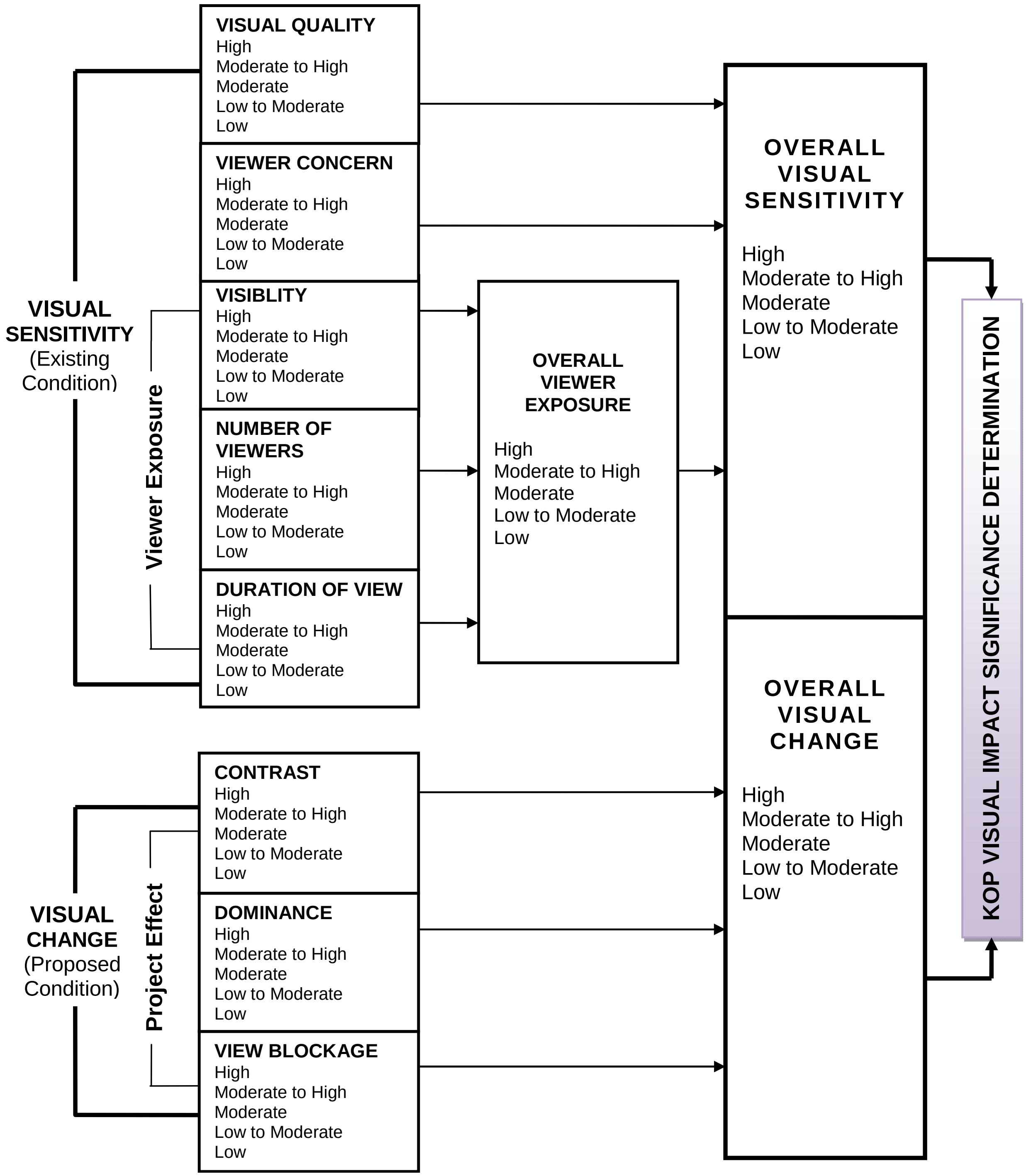
View Blockage

View blockage is the extent to which an existing publicly visible landscape feature (built or natural elements) would be blocked from view by the proposed project. The view is also disrupted when the continuity of the view is interrupted. Higher quality landscape features can be disrupted by the introduction of lower quality features into the view. The degree of view blockage is rated from low to high.

Overall Visual Change

Overall visual change is based on *contrast*, *dominance*, and *view blockage*. These factors are given equal weight in an assessment of overall visual change. Overall visual change is rated from low to high.

VISUAL RESOURCES Diagram 1- Key Observation Point Evaluation



VISUAL IMPACT SIGNIFICANCE DETERMINATION

Visual impact significance is based on the ratings for *overall visual sensitivity* and *overall visual change*. The ratings for overall visual sensitivity and overall visual change are combined to determine significance of the visual impact for each KOP (**Table 5**).

Table 5
KOP Visual Impact Significance Determination

Overall Visual Sensitivity	Overall Visual Change				
	High	**Moderate to High**	**Moderate**	**Low to Moderate**	**Low**
High	Significant	Significant	Significant	Less Than Significant	Less Than Significant
Moderate to High	Significant	Significant	Potentially Significant	Less Than Significant	Less Than Significant
Moderate	Significant	Potentially Significant	Less Than Significant	Less Than Significant	Less Than Significant
Low to Moderate	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	No Impact
Low	Less Than Significant	Less Than Significant	Less Than Significant	No Impact	No Impact

Notes:
"Significant effect on the environment" means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance (Cal. Code Regs., tit. 14, § 15382). Implementation of mitigation measures may or may not avoid the impact or reduce it to a less-than-significant level.

CEQA does not require mitigation for less-than-significant impacts.

PUBLICLY VISIBLE WATER VAPOR PLUMES

When a thermal power generation facility with a cooling tower[1] is operated at times when the ambient temperature is low and relative humidity is high, the warm moisture (water vapor) that is discharged from the cooling tower condenses as it mixes with cooler ambient air, resulting in creation of a visible plume. The publicly visible plume could substantially degrade the existing visual character or quality of the project site and its surroundings, potentially causing a significant impact to visual resources.

Computer modeling is used to estimate the frequency and size of the vapor plume(s) for a power plant project. If the plume modeling analysis results in a conclusion that plume frequency is greater than 20 percent, staff prepares an analysis of the vapor plume's potential effects on visual resources in the VSOI for the project.

[1] Other types of thermal power generation facilities are also sources of visible water vapor plumes, including combined cycle gas turbine exhausts and geothermal steam exhausts. These facilities are evaluated in the same manner as cooling tower plumes.

Staff established a 20th percentile plume frequency during *seasonal* (November through April) *daylight clear* hours (i.e., no rain/fog high visual contrast hours) as a reasonable worst-case scenario. It is during high visual contrast viewing hours (“clear sky”) conditions that water vapor plumes show the greatest contrast with the sky. Water vapor plumes emitted during rain and fog conditions and under some cloud conditions (e.g., marine layer) or at nighttime would not introduce substantial visual contrast into the environment. Staff has included in the *clear* category:

a) all hours with sky cover equal to or less than 10 percent, and

b) half of the hours with total sky cover of 20–90 percent.

The rationale for including these two components in this category is as follows:

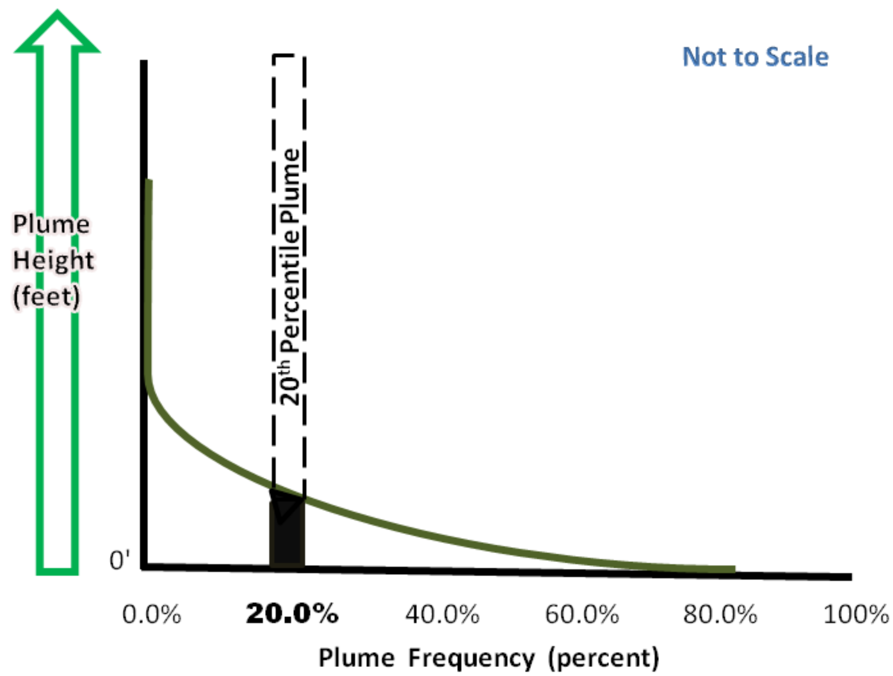
a) Visible plumes typically contrast most with sky under clear conditions, and when total sky cover is equal to or less than 10 percent, clouds either do not exist or they make up such a small proportion of the sky that conditions appear to be virtually clear.

b) For a substantial portion of the time when total sky cover is 20–90 percent, the opacity of sky cover is relatively low (equal to or less than 50 percent), so this sky cover does not always substantially reduce contrast with visible plumes; staff has estimated that approximately half of the hours meeting the latter sky cover criteria can be considered high visual contrast hours and are included in the “clear sky” definition.

Plume frequency is calculated on the 6-month portion of the year when the ambient conditions are such that visible water vapor plumes are most likely to occur. This maximum 6-month “seasonal” period for plume formation generally occurs between November and April when temperatures are cool or cold, and relative humidity is high.

Staff uses the Combustion Stack Visible Plume (CSVP) model to estimate plume frequency and plume size. If the CSVP modeling conducted for the proposed project’s cooling tower predicts a *seasonal daylight clear* hour plume frequency of 20 percent or greater, staff evaluates the *20th percentile plume* in the visual resources analysis. (Discussions of visible water vapor plumes are presented in the Visual Resources section of staff assessments.) Staff considers the 20th percentile plume to be the reasonable worst-case plume dimension for the purpose of analysis. Publicly visible plumes that occur more than 20 percent of the time would be more frequent but smaller in size than those that occur less than 20 percent of the time. This approach recognizes that the largest plumes would occur very rarely, while the most frequent plumes and even the average plumes would be much smaller in size. For example, using a scale of 0 to 100, a 1 percentile plume would be extremely large, very noticeable to a wide area, but would occur very infrequently. A 100th percentile plume would be nonexistent (see **Diagram 2** below). If the modeled publicly visible plume is predicted to occur less than 20 percent of seasonal daylight clear hours, the impact to the existing visual character or quality of the project site and its surroundings is generally considered less than significant, and it is not considered further in the visual resources analysis.

Visual Resources Diagram 2 – Visible Plume Height/Frequency Curve



A plume frequency of 20% represents staff's threshold for conducting a detailed plume analysis.

In the evaluation of the visual effects of the modeled 20th percentile plume, staff addresses the *overall visual sensitivity* for the existing condition and the potential *overall visual change* created by the plume's degree of contrast, level of dominance, and view blockage from the selected KOPs (see **Visual Resources Diagram 1**).

PUBLICLY VISIBLE WATER VAPOR PLUME ABATEMENT METHODS

Staff has identified four methods to lower a plume's frequency or eliminate the plume completely.

Increase Cooling Tower Air Flow

Increasing the cooling tower air flow will lower the exhaust temperature and reduce plume frequency but would not eliminate the potential for visible water vapor plumes under all conditions. This method focuses on the design of the cooling tower fan flow capacity versus the amount of heat rejected in the cooling tower. Any specific cooling tower design needs to be fully modeled to determine the effective final plume frequency reductions.

Wet/Dry Cooling Tower

This type of cooling tower reduces plume formation by adding heat or heated ambient air to the saturated wet cooling section exhaust to reduce its saturation level. The saturated exhaust can be heated using a separate dry module above the wet cooling tower. Alternatively, outside air can be pulled into separate areas where a dry section heats the air to reduce humidity and a wet section creates warm, humid exhaust. The heated ambient air and humid exhaust are mixed to reduce the humidity of the combined exhaust steam to avoid creating a plume when meeting ambient air.

The amount of plume reduction that can be accomplished by this type of system can vary from a relatively moderate reduction to a significant reduction in visible plume frequency. The specific wet/dry design would be based on the desired degree of plume reduction.

Wet Surface Air Cooler

The basic operating principle of a wet surface air cooler (WSAC) is rejection of heat by evaporation. The WSAC technology is similar to a wet/dry cooling tower. Where this system is different is that it could eliminate the need for a heat exchanger. The cooling fluid(s) used for the intercooler and any auxiliary cooling systems could be piped directly into the WSAC, which can operate as a non-contact heat rejection system with the use of water sprayed over the cooling pipes to increase the heat rejection when necessary. The expected hot temperature of the cooling fluid would increase the efficiency of this type of system. There may still be the potential for plumes to form under high cooling load periods during certain ambient conditions, but the WSAC could be designed, such as for wet/dry operation depending on cooling load, to maintain a minimal plume frequency well below 20 percent during “clear hours.”

Air Cooled Condenser (Dry Cooling)

The use of an air cooled condenser (ACC) would eliminate the formation of a publicly visible water vapor plume. Air cooled condensers condense exhaust steam from the steam turbine and return condensate to the boiler to perform this function. Steam enters the air cooled condenser above the heat exchangers, flows downward through the heat exchanger tubes, where it condenses and is captured in pipes at the base of the heat exchangers. The condensate is then returned to the boiler water system. Mechanical fans force air over the heat exchangers.

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VISUAL RESOURCES APPENDIX-2

Visual Resources Appendix-2 – Key Observation Point Evaluation Matrix and Visual Impact Determination Conclusions													
KOP	**Visual Sensitivity (Existing Condition)**							**Visual Change (Proposed Condition)**					**Visual Impact Determination**
	Visual Quality	Viewer Concern	Viewer Exposure: Visibility	Viewer Exposure: Number of Viewers	Viewer Exposure: Duration of View	Viewer Exposure: Overall Viewer Exposure [1]	Overall Visual Sensitivity [2]	Contrast	Dominance	View Blockage	Overall Visual Change [3]		Overall Visual Sensitivity + Overall Visual Change [4]
1 – View from Huntington State Beach	Low	High	High	High	High or Moderate to High	High	Moderate to High	Low to Moderate	Low	Low	Low		Less Than Significant
2 – View from Huntington Beach Municipal Pier	Moderate to High	High	Moderate	High	High	Moderate to High	Moderate to High	Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate		Less Than Significant
3 – View from Edison Community Park	Moderate	High or Moderate to High	Moderate	Moderate to High	Moderate to High	Moderate to High	Moderate to High	Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate		Less Than Significant
4 – View from Magnolia Street near the PCH	Moderate	High	High	High	Moderate to High	High	Moderate to High	Moderate to High	Moderate to High	Moderate to High	Moderate to High		Significant
5 – View from the Driveway Entrance to the Huntington By-The-Sea Mobile Estates and RV Park	Low	High	High	High	Moderate to High	High	Moderate to High	Moderate to High or High	Moderate to High	Moderate to High	Moderate to High		Significant

Visual Resources Appendix-2 – Key Observation Point Evaluation Matrix and Visual Impact Determination Conclusions													
KOP	**Visual Sensitivity (Existing Condition)**							**Visual Change (Proposed Condition)**				**Visual Impact Determination**
	Visual Quality	Viewer Concern	Viewer Exposure				Overall Visual Sensitivity [2]	Contrast	Dominance	View Blockage	Overall Visual Change [3]	Overall Visual Sensitivity + Overall Visual Change [4]
			Visibility	Number of Viewers	Duration of View	Overall Viewer Exposure [1]						
6 – View from the PCH near Brookhurst Street	Moderate	Moderate to High or High	Moderate to High	High	Moderate to High	Moderate to High	Moderate to High	Low to Moderate	Low to Moderate	Low	Low to Moderate	Less Than Significant
7 – View from the Southern Bluff of the Huntington Beach Mesa	Moderate	High	Low to Moderate	Moderate to High or High	High	Moderate to High	Moderate to High	Low	Low	Low	Low	Less Than Significant

Notes: High = 5 Moderate to High = 4 Moderate = 3 Low to Moderate = 2 Low = 1

[1] Visibility + Number of Viewers + Duration of Views ÷ 3 = Overall Viewer Exposure
[2] Visual Quality + Viewer Concern + Overall Viewer Exposure ÷ 3 = Overall Visual Sensitivity
[3] Contrast + Dominance + View Blockage ÷ 3 = Overall Visual Change
[4] Overall Visual Sensitivity + Overall Visual Change = Visual Impact Determination (see Table 5 in Appendix VR-1)

VISUAL RESOURCES APPENDIX-3 APPLICABLE LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

In the table below, verbatim text is provided for laws, ordinances, regulations and standards (LORS) that are applicable to visual resources for the Huntington Beach Energy Project. **VR Table 2** in the **Visual Resources** section of this staff assessment summarizes these LORS and addresses their consistency with the proposed project.

In some instances, parts of sections of the cited ordinance that are inapplicable to the proposed project are left out, as indicated below when the numbering for objectives and policies is nonconsecutive or when an ellipsis is used in the text.

Visual Resources Appendix-3
Laws, Ordinances, Regulations, and Standards Applicable to Visual Resources

Sources and Goals; Chapters and Sections	Objectives, Policies, and Standards
California Coastal Act of 1976	
Section 30251 – Scenic and visual qualities	The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.
City of Huntington Beach General Plan	
Land Use Element	
Goal LU 4 – Achieve and maintain high quality architecture, landscape, and public open spaces in the City	• Objective LU 4.1 Promote the development of residential commercial, industrial, and public buildings and sites that convey a high quality visual image and character. o Policy LU 4.1.2 Require that an appropriate landscape plan be submitted and implemented for development projects subject to discretionary review. o Policy LU 4.1.3 Require property owners to maintain landscaping, remove and abate weeds, and replace unhealthy or dead landscape. o Policy LU 4.1.4 Encourage developers to incorporate mature and specimen trees and other significant vegetation, as defined by the City, that may exist on a site into the design of a development project for that site.

Visual Resources Appendix-3
Laws, Ordinances, Regulations, and Standards Applicable to Visual Resources

Sources and Goals; Chapters and Sections	Objectives, Policies, and Standards
Goal LU 13 – Achieve the development of a mix of governmental service, institutional, educational, and religious uses that support the needs of Huntington Beach's residents	o Policy LU 13.1.8 Ensure that the City's public buildings, sites, and infrastructure improvements are designed to be compatible in scale, mass, character, and architecture with existing buildings and pertinent design characteristics prescribed by this General Plan for the district or neighborhood in which they are located, and work with non-City public agencies to encourage compliance.
Goal LU 14 – Preserve the City's open spaces	• Objective LU 14.1 Preserve and acquire open spaces for the City's existing and future residents that provide, maintain, and protect significant environmental resources, recreational opportunities, and visual relief from development.
Urban Design Element	
Goal UD 1 – Enhance the visual image of the City of Huntington Beach	o Policy UD 1.2.1 Require public improvements to enhance the existing setting for all key nodes and pedestrian areas through the consideration of the following: ▪ f. Incorporate landscaping to mask oil operations and major utilities, such as the Edison generating station.
Goal UD 2 – Protect and enhance the City's public coastal views and oceanside character and screen any uses that detract from the City's character	• Objective UD 2.1 Minimize the visual impacts of new development on public views to the coastal corridor, including views of the sea and the wetlands. o Policy UD 2.1.1 Require that new development be designed to consider coastal views in its massing, height, and site orientation. • Objective UD 2.2 Minimize the visual impacts of oil production facilities and other utilities where they encroach upon view corridors or are visually incompatible with their surrounding uses. o Policy UD 2.2.1 Require landscape and architectural buffers and screens around oil production facilities and other utilities visible from public rights-of-way. o Policy UD 2.2.4 Require the undergrounding of utility lines. o Policy UD 2.2.5 Require the review of new and or expansions of existing industrial and utility facilities to ensure that such facilities will not visually impair the City's coastal corridors and entry nodes.[1]

[1] A "node" is defined as a significant focal point, such as a street intersection that acts as a center of movement and activity. The City of Huntington Beach identifies secondary entry nodes, including

Visual Resources Appendix-3
Laws, Ordinances, Regulations, and Standards Applicable to Visual Resources

Sources and Goals; Chapters and Sections	Objectives, Policies, and Standards
Circulation Element	
Goal CE 7 – Maintain and enhance the visual quality and scenic views along designated corridors	• Objective CE 7.1 Enhance existing view corridors along scenic corridors and identify opportunities for the designation of new view corridors. o Policy CE 7.1.1 Require the roadways, as shown in Figure CE-12, to be improved and maintained as local scenic highways, and landscape corridors with key entry points. • Objective CE 7.2 Integrate scenic highway systems with open space and recreational corridors, enhancing public spaces and providing appropriate transitions between differing uses. o Policy CE 7.2.3 Encourage that all proposed building sites adjacent to a scenic highway include open space, plazas, gardens or landscape areas which enhance the scenic highway and create a buffer between the building site and the scenic highway. • Objective CE 7.3 Protect scenic corridors and open space / landscape areas by blending man-made features with the natural environment. o Policy CE 7.3.1 Require that new development include landscaping that is compatible with the visual character of the designated scenic highways and corridors. o Policy CE 7.3.4 Continue to locate new and relocated utilities underground when possible. All others shall be placed and screened to minimize public viewing.
Utilities Element	
Goal U 5 – Maintain and expand service provision to City of Huntington Beach residences and businesses	o Policy U 5.1.4 Require the review and or expansions of existing industrial and utility facilities to ensure that such facilities will not visually impair the City's coastal corridors and entry nodes.
Environmental Resources / Conservation Element	
Goal ERC 4 – Maintain the visual quality of the City's natural land forms and water bodies	• Objective ERC 4.1 Enhance and preserve the aesthetic resources of the City, including natural areas, beaches, bluffs and significant public views. o Policy ERC 4.1.5 Promote the preservation of public view corridors to the ocean and the waterfront through strict application of local ordinances, design guidelines

Newland Street (along the west side of the HBEP site) and Magnolia Street (near the east side of the HBEP site) where they intersect with the Pacific Coast Highway.

Sources and Goals; Chapters and Sections	Objectives, Policies, and Standards
	and related planning efforts, including defined view corridors.
Goal ERC 5 – Conserve the natural environment and resources of the community for the long-term benefit and enjoyment of its residents and visitors	o Policy ERC 5.2.3 Require that the use of energy saving designs and materials be incorporated into the construction of all public buildings, while encouraging their use City-wide.
Coastal Element	
Goal C 4 – Preserve and, where feasible, enhance and restore the aesthetic resources of the City's coastal zone, including natural areas, beaches, harbors, bluffs, and significant public views	• Objective C 4.1 Provide opportunities within the Coastal Zone for open space as a visual and aesthetic resource. o Policy C 4.1.1 The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect public views to and along the ocean and scenic coastal areas. o Policy C 4.1.4 Preserve skyward, night time views through minimization of lighting levels along the shoreline. • Objective C 4.2 Promote the protection of the Coastal Zone's visual and aesthetic resources through design review and development. o Policy C 4.2.1 Ensure that the following minimum standards are met by new development in the Coastal Zone as feasible and appropriate: a) Preservation of public views to and from the bluffs, to the shoreline and ocean and to the wetlands. b) Adequate landscaping and vegetation. c) Evaluation of project design regarding visual impact and compatibility. d) Incorporate landscaping to mask oil operations and major utilities, such as the electrical power plant on the Pacific Coast Highway. o Policy C 4.2.2 Require that the massing, height, and orientation of new development be designed to protect public coastal views. o Policy C 4.2.3 Promote the preservation of significant public view corridors to the coastal corridor, including views of the sea and the wetlands through strict application of local ordinances, design guidelines and related planning efforts, including defined view corridors. • Objective C 4.6 Enhance the visual appearance of the Coastal Zone through the development and implementation of

Sources and Goals; Chapters and Sections	Objectives, Policies, and Standards
	landscaping standards. o Policy C 4.6.3 For new re-development, require the preservation of existing mature trees (as defined by the City's Landscape Ordinance). If preservation of existing mature trees is not feasible, require that removed trees be replaced at a minimum 2:1 ratio either on site, or elsewhere within the Coastal Zone, as prescribed by the City. • Objective C 4.7 Improve the appearance of visually degraded areas within the Coastal Zone. o Policy C 4.7.1 Promote the use of landscaping material to screen uses that detract from the scenic quality of the coast along public rights-of-way and within public view. o Policy C 4.7.2 Continue to locate new and relocated utilities underground when possible. All others shall be placed and screened to minimize public viewing. o Policy C 4.7.5 Require the review of new and/or expansions of existing industrial and utility facilities to ensure that such facilities will not visually impair the City's coastal corridors and entry nodes. o Policy C 4.7.8 Require landscape and architectural buffers and screens around oil production facilities and other utilities visible from public rights-of-way.
Goal C 8 – Accommodate energy facilities with the intent to promote beneficial effects while mitigating any potential adverse impacts	• Objective C 8.4 Minimize the safety and aesthetic impacts of resource production facilities on non-resource production land uses. o Policy C 8.4.2 Encourage the owners of the electric generating plant located on Pacific Coast Highway to provide landscaping and other measures to buffer and screen the power plant from Pacific Coast Highway and Beach Boulevard. Require any power plant expansion or alteration proposals to include adequate buffer and screening measures.
Huntington Beach Zoning & Subdivision Ordinance	
Title 21 – Base Districts	
Chapter 214, PS Public-Semipublic District; Section 214.08 PS District – Development Standards	• Minimum site landscaping – 8 percent o Additional Development Standards: (F) Planting Areas: (2) A 10-foot-wide landscaped strip shall be

Sources and Goals; Chapters and Sections	Objectives, Policies, and Standards
	provided along all street frontages, except for necessary driveways and walks. (G) References Chapter 232: Landscape Improvements *(see below)* (N) In the coastal zone, the maximum allowable height of structures shall be reduced as necessary to retain compatibility with the established physical scale of the area and to preserve and enhance public visual resources.
Title 22 – Overlay Districts	
Chapter 221, Coastal Zone Overlay District; Section 221.10 Requirements for New Development Adjacent to Resource Protection Area	As a condition of new development adjacent to a resource protection area, which includes any wetland, Environmentally Sensitive Habitat Area (ESHA), associated buffers, land zoned Coastal Conservation, as the same are defined in the City's Local Coastal Program, an applicant shall comply with the requirements listed below. These requirements shall be applicable to all lots within new subdivisions as well as development proposed on existing lots within and/or adjacent to resource protection areas. • A. Landscape Plan shall be prepared that prohibits the planting, naturalization or persistence of invasive plants, and encourages low-water-use plants, and plants primarily native to coastal Orange County of local stock. • G. Visual impacts created from any walls or barriers adjacent to open space conservation and passive recreational use areas shall be minimized through measures such as open fencing/wall design, landscape screening, use of undulating or off-set wall features, etc. • H. Walls, fences, gates and boundary treatments shall use wood, wrought iron, frosted or partially-frosted glass or other visually permeable barriers that are designed to prevent creation of a bird strike hazard. Clear glass or Plexiglass shall not be installed unless appliqués (e.g., stickers/decals) designed to reduce bird strikes by reducing reflectivity and transparency are also used.
Chapter 221, Coastal Zone Overlay District; Section 221.14 Preservation of Visual Resources	• A. An applicant proposing new development shall provide the Director with an evaluation of the project's visual impact, and incorporate in its design, to the satisfaction of the Director, the following elements: 1. Preservation of public views to and from the bluffs, to the shoreline and ocean, and to the wetlands; 2. Preservation of existing mature trees to the maximum extent feasible.

Visual Resources Appendix-3
Laws, Ordinances, Regulations, and Standards Applicable to Visual Resources

Sources and Goals; Chapters and Sections	Objectives, Policies, and Standards
Chapter 221, Coastal Zone Overlay District; Section 221.28 Maximum Height	• B. All rooftop mechanical devices, except for solar panels, which may be permitted to exceed the height limit under Section 230.72, shall be set back and screened so that they are not visible.
Title 23 – Provisions Applying in All or Several Districts	
Chapter 230, Site Standards; Section 230.72 Exceptions to Height Limits	[N]ecessary mechanical appurtenances…may exceed the maximum permitted height in the district in which the site is located by no more than 10 feet. The Zoning Administrator may approve greater height with a conditional use permit. Within the coastal zone exceptions to height limits may be granted only when public visual resources are preserved and enhanced where feasible.
Chapter 230, Site Standards; Section 230.76 Screening of Mechanical Equipment	• A. General Requirement. [A]ll exterior mechanical equipment…shall be screened from view on all sides. Equipment to be screened includes, but is not limited to, heating, air conditioning, refrigeration equipment, plumbing lines, ductwork, and transformers. Screening of the top of equipment may be required by the Director, if necessary to protect views from an R or OS district. Rooftop mechanical equipment shall be setback 15 feet from the exterior edges of the building. • C. Screening Specifications. A mechanical equipment plan shall be submitted to the Director to ensure that the mechanical equipment is not visible from a street or adjoining lot.
Chapter 231, Off-Street Parking and Loading Provisions; Section 231.18 Design Standards	• C. Illumination. All parking area lighting shall be energy-efficient and designed so as not to produce glare on adjacent residential properties. Security lighting shall be provided in areas accessible to the public during nighttime hours, and such lighting shall be on a time-clock or photo-sensor system.
Chapter 232, Landscape Improvements; Section 232.02 Applicability	Minimum site landscaping and required planting areas shall be installed and maintained in accord with the standards and requirements of this Chapter, which shall apply to all nonresidential projects….
Chapter 232, Landscape Improvements; Section 232.04 General Requirements	• A. Landscape plans shall be prepared by a California State Licensed Landscape Architect except plans for residential projects…. The plans shall be submitted to the Public Works and Community Development Departments and receive approval prior to issuance of a building permit. No significant or substantive changes to approved landscaping or irrigation plans shall be made without prior written approval by the Director and the landscape designer. Substantial changes shall require approval of the Planning Commission or Zoning Administrator, whichever granted approval of the project. • B. Landscape improvements shall comply with the Arboricultural and Landscape Standards and Specifications on

Sources and Goals; Chapters and Sections	Objectives, Policies, and Standards
	file in the Department of Public Works. • C. Landscape materials shall not be located such that, at maturity: 1. They interfere with safe sight distances for vehicular, bicycle or pedestrian traffic; 2. They conflict with overhead or underground utility lines, overhead lights, or walkway lights; or 3. They block pedestrian or bicycle ways. • D. Evidence of completion of required landscaping and irrigation improvements shall be supplied to the Public Works Department on a Landscape Certification form. This form shall be required to be submitted prior to issuance of an occupancy permit for new construction. • E. If mature trees that were originally required to be planted by this code, conditions of approval, or designed plans are removed, or if mature trees that are considered as specimen trees are removed, or if the trees are permanently disfigured or mutilated beyond their ability to regrow to an acceptable form for that specific variety, then those trees shall be replaced and, whenever possible, with equivalent size and specie per the project's original approved plans.
Chapter 232, Landscape Improvements; Section 232.06 Materials	Landscape improvement plans shall be harmonious with the architectural design and demonstrate a recognizable pattern or theme for the overall development by choice and location of materials. • A. Plant materials shall be selected for energy efficiency and drought tolerance; adaptability and relationship to Huntington Beach environment; color, form and pattern; ability to provide shade; soil retention, fire resistiveness, etc. The overall landscape plan shall be integrated with all elements of the project, such as buildings, parking lots and streets, to achieve desirable micro-climate and minimize energy demand and water use. • B. The use of crushed rock or gravel for large area coverage shall be avoided. • C. Nonturf areas, such as shrub beds, shall be top dressed with a bark chip mulch or approved alternative. • D. Where shrubs or low-level vegetation are used, vegetative matter at maturity shall cover at least 75 percent of actual planted area. • E. The use of landscape materials shall be designed to

Visual Resources Appendix-3
Laws, Ordinances, Regulations, and Standards Applicable to Visual Resources

Sources and Goals; Chapters and Sections	Objectives, Policies, and Standards
	minimize sun exposure of paved surfaces and structures. • F. Irrigation systems shall be in accordance with the City water efficient landscape requirements of Chapter 14.52 and the Arboricultural Standards and Specifications on file in the Department of Public Works. • G. Turf areas shall be minimized. Those areas proposed shall be planted with field-grown established drought-tolerant sod. Seeding may be allowed by the Director. • H. Seventy-five percent of all shrubs, except those used for ground cover, shall be a minimum 5-gallon size. • I. Ground cover areas shall be planted with well-rooted cuttings or container stock.
Chapter 232, Landscape Improvements; Section 232.08 Design Standards	• A. General Planting Provisions 1. A minimum of 8 percent of the total net site area shall be landscaped, or as required by Title 21 or conditions of approval. 2. For traffic visibility purposes, the maximum height of shrubbery shall be 32 inches within any parking area and within 5 feet of any driveway. 3. Turf shall not be installed on grade differential greater than 4:1. Where the maximum overall grade differential is three (3) feet, 3:1 shall be considered maximum. 4. Any planter or screen wall shall be placed behind the landscape area and shall set back 5 feet from the edge of any alley or driveway. • B. General Tree Requirements 4. Non-residential developments shall have one 36-inch box tree for each 45 lineal feet of street frontage planted within the first 15 feet of the setback area adjacent to a street. 5. Specimen palms may be substituted at a ratio of ½ foot brown trunk height for 1 inch of box tree inch required. • C. Off-Street Parking Facilities 1. A 10-foot-wide landscaped planter area (inside dimension) shall be provided between any streetside property line and a parking area except at driveway openings. Berming shall be a minimum of 20 inches in height. When a planting area is less than 10 feet wide, a 32-inch-high wall shall be provided. 2. Parking facilities shall have perimeter landscaping areas as

Visual Resources Appendix-3
Laws, Ordinances, Regulations, and Standards Applicable to Visual Resources

Sources and Goals; Chapters and Sections	Objectives, Policies, and Standards
	follows: a) Areas shall be a minimum 3 feet in plantable width and include one tree for each 90 square feet of landscaped area. b) Areas shall be increased to 5 feet in plantable width when the parking facility dimension is more than 100 feet adjacent to the side or rear property line. c) Minimum plantable area for each tree shall be 48 inches square. 3. Interior landscaping areas shall be distributed throughout the parking area and shall equal 5 percent of the perimeter landscaping area. These areas shall include a minimum of one minimum 24-inch box tree for every 10 parking spaces and shall be located throughout the parking area. 4. The end of each row of parking spaces shall be separated from driveways by a landscaped planter, minimum 2 feet wide and in addition include a “step off” area. 5. Planter areas adjacent to parking spaces shall be provided with a 12-inch-wide by 3½-inch-thick “step off” area flush with and behind the curb for the entire length of planter or provide 4-foot-square or 5-foot-diameter circular planter surrounded by textured/and/or colored concrete. 6. A concrete curb may be required adjacent to the sidewalk within the right-of-way. 7. All parking area landscaping shall be protected from vehicular and pedestrian damage by a 6-inch-high, 6-inch-wide curb of Portland cement concrete. Additional protection shall be provided by one of the following methods: a) Two (2) feet of landscaping consisting of low shrubs or ground cover may be provided between a parking stall and the required landscape area. The additional landscaping shall not count toward the required percentage of landscaping or minimum planter width. This method will allow vehicles to extend over the additional landscape area in conjunction with permitting a reduction in the required length of the parking space from 19 feet to 17 feet; or b) Other alternatives acceptable to the Director.

Visual Resources Appendix-3
Laws, Ordinances, Regulations, and Standards Applicable to Visual Resources

Sources and Goals; Chapters and Sections	Objectives, Policies, and Standards
Chapter 232, Landscape Improvements; Section 232.10 Irrigation	All landscape areas shall be provided with a permanent underground, electrically automated irrigation system, designed to provide complete and adequate coverage to sustain and promote healthy plant life. The irrigation system shall not cause water to spray onto or cause water, mud or debris to flow across a public sidewalk. Pop-up sprinkler heads shall be required directly adjacent to all pedestrian or vehicular surfaces and located in areas that avoid vehicle overhang.
Title 24 – Administration	
Chapter 244, Design Review; Section 244.02 Applicability	Design review is required for all projects pursuant to any other provision of this Zoning and Subdivision Ordinance and for all projects located within redevelopment areas, specific plans as applicable, areas designated by the City Council, City facilities or projects abutting or adjoining City facilities, projects in or abutting or adjoining OS-PR and OS-S districts, and General Plan primary and secondary entry nodes.
Chapter 244, Design Review; Section 244.06 Scope of Review	• A. In making its determination, the Board shall review and consider: 1. The arrangement and relationship of proposed structures and signs to one another and to other developments in the vicinity; 2. Whether the relationship is harmonious and based on good standards of architectural design; 3. The compatibility in scale and aesthetic treatment of proposed structures with public district areas; 4. The adequacy of proposed landscaping; 5. Elements of design affecting the performance characteristics of the proposed development; and 6. Whether energy conservation measures have been proposed and the adequacy of such measures, including, but not limited to, the use of active and passive solar energy systems.
Chapter 244, Design Review; Section 244.08 Required Plans and Materials	Plans and materials to fully describe and explain the proposed development shall be submitted as required by the application form or by the Director, as deemed necessary.
Sources: City of Huntington Beach 1996a, 1996b, 1996c, 1996d, 1996e, 2011; Zoning and Subdivision Ordinance of the City of Huntington Beach is available at: <http://www.huntingtonbeachca.gov/Government/Elected_Officials/city_clerk/Zoning_Code/index.cfm?cross=ture&department=planning&sub=zoning&page=>.	

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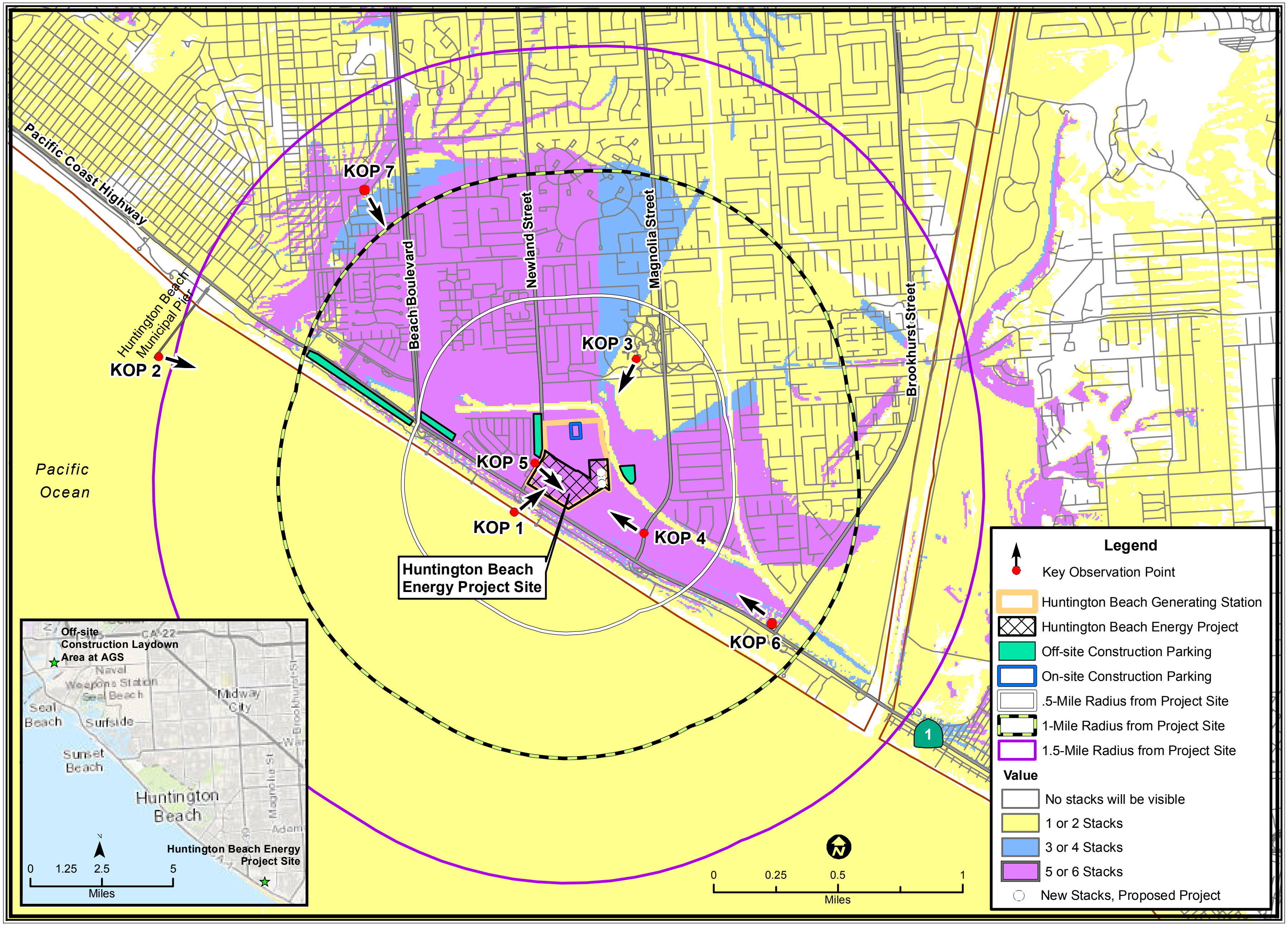
VISUAL RESOURCES ATTACHMENT-1

Complaint Report and Resolution Form

Facility Name: Huntington Beach Energy Project	**Complaint Log No:**
Complainant's name and address:	Phone No:
Date and time complaint received: Complaint filed by: ☐ Telephone ☐ Writing (attach letter) ☐ In Person Date of first occurrence:	
Description of the complaint (lighting, duration, etc.):	
Findings of investigation by AES personnel: Indicate if complaint relates to a violation of an Energy Commission condition: ☐ Yes ☐ No Date complainant contacted to discuss findings:	
Description of corrective measures taken or other complaint resolution: Indicate if complainant agrees with proposed resolution: In not, explain: Additional relevant information:	
If corrective action necessary, date completed: Date of first response to complainant: (attach copy) Date of final response to complainant: (attach copy)	
This information is certified to be correct: Plant or project manager's signature:	Date:

VISUAL RESOURCES - FIGURE 1

Huntington Beach Energy Project - Proposed Project Viewshed

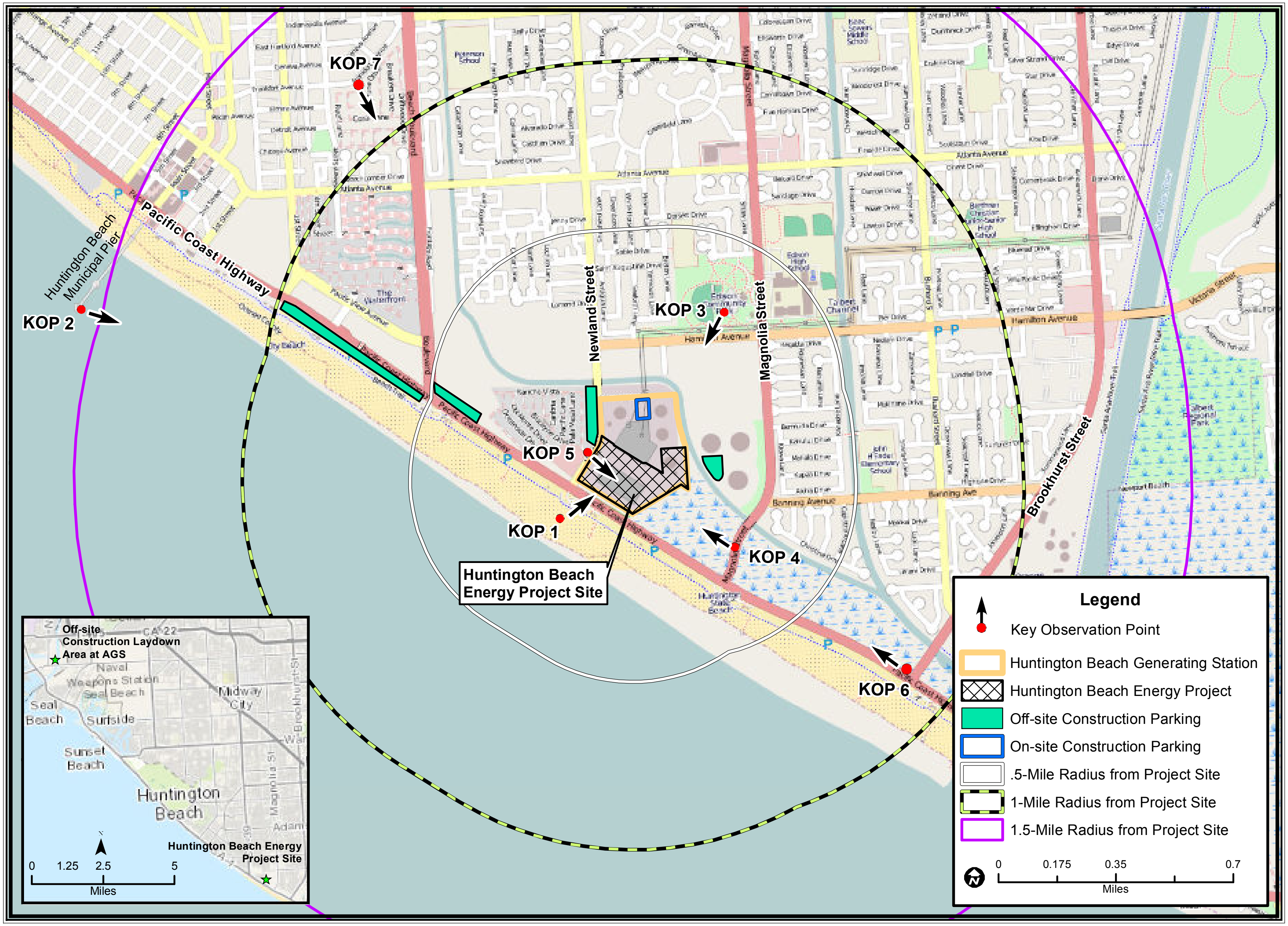


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Adapted from AES Southland Development 2012c, CH2MHill, Esri, & USGS

VISUAL RESOURCES - FIGURE 2

Huntington Beach Energy Project - Proposed Project Site and Key Observation Points



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Adapted from AES Southland Development 2012c, CH2MHill, Esri, & USGS

VISUAL RESOURCES - FIGURE 3a

Huntington Beach Energy Project - KOP 1 - View from Huntington State Beach, Existing View

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AES Southland Development 2013

VISUAL RESOURCES - FIGURE 3b

Huntington Beach Energy Project - KOP 1 - View from Huntington State Beach, Simulated View

View depicts HBEP 5 years after completion of development.

SOURCE: AES Southland Development 2013

VISUAL RESOURCES - FIGURE 4

Huntington Beach Energy Project - Proposed Project Site, Characteristic View from the Huntington State Beach Area

SOURCE: Energy Commission Staff

VISUAL RESOURCES - FIGURE 5

Huntington Beach Energy Project - Proposed Project Site, Characteristic View for Southbound Motorists on the Pacific Coast Highway

SOURCE: Energy Commission Staff

VISUAL RESOURCES - FIGURE 6a

Huntington Beach Energy Project - KOP 2 - View from Huntington Beach Municipal Pier, Existing View

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AES Southland Development 2012b

VISUAL RESOURCES - FIGURE 6b

Huntington Beach Energy Project - KOP 2 - View from Huntington Beach Municipal Pier, Simulated View

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AES Southland Development 2012b

VISUAL RESOURCES - FIGURE 7

Huntington Beach Energy Project - Huntington Beach, Characteristic View from the Huntington Beach Municipal Pier

SOURCE: Energy Commission Staff

VISUAL RESOURCES - FIGURE 8a

Huntington Beach Energy Project - KOP 3 - View from Edison Community Park, Existing View

SOURCE: AES Southland Development 2012b

VISUAL RESOURCES - FIGURE 8b

Huntington Beach Energy Project - KOP 3 - View from Edison Community Park, Simulated View

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AES Southland Development 2012b

VISUAL RESOURCES - FIGURE 9

Huntington Beach Energy Project - Edison Community Park, Characteristic View in the Park

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Energy Commission Staff

VISUAL RESOURCES - FIGURE 10a

Huntington Beach Energy Project - KOP 4 - View from Magnolia Street near the Pacific Coast Highway, Existing View

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AES Southland Development 2013

VISUAL RESOURCES - FIGURE 10b

Huntington Beach Energy Project - KOP 4 - View from Magnolia Street near the Pacific Coast Highway, Simulated View

View depicts HBEP 5 years after completion of development.

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AES Southland Development 2013

VISUAL RESOURCES - FIGURE 11

Huntington Beach Energy Project - Brookhurst Marsh and the Huntington Beach Channel, Characteristic View from Magnolia Street

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Energy Commission Staff

VISUAL RESOURCES - FIGURE 12a

Huntington Beach Energy Project - KOP 5 - View from the Driveway Entrance to the Huntington-By-The-Sea Mobile Estates and RV Park, Existing View

SOURCE: AES Southland Development 2013

VISUAL RESOURCES - FIGURE 12b

Huntington Beach Energy Project - KOP 5 - View from the Driveway Entrance to the Huntington-By-The-Sea Mobile Estates and RV Park, Simulated View

SOURCE: AES Southland Development 2013

VISUAL RESOURCES - FIGURE 13

Huntington Beach Energy Project - Newland Street, Characteristic View toward the Southern California Edison Switchyard

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Energy Commission Staff

VISUAL RESOURCES - FIGURE 14a

Huntington Beach Energy Project - KOP 6 - View from the Pacific Coast Highway near Brookhurst Street, Existing View

SOURCE: AES Southland Development 2012b

VISUAL RESOURCES - FIGURE 14b

Huntington Beach Energy Project - KOP 6 - View from the Pacific Coast Highway near Brookhurst Street, Simulated View

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AES Southland Development 2012b

VISUAL RESOURCES - FIGURE 15a

Huntington Beach Energy Project - KOP 7 - View from the Southern Bluff of the Huntington Beach Mesa, Existing View

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AES Southland Development 2012b

VISUAL RESOURCES - FIGURE 15b

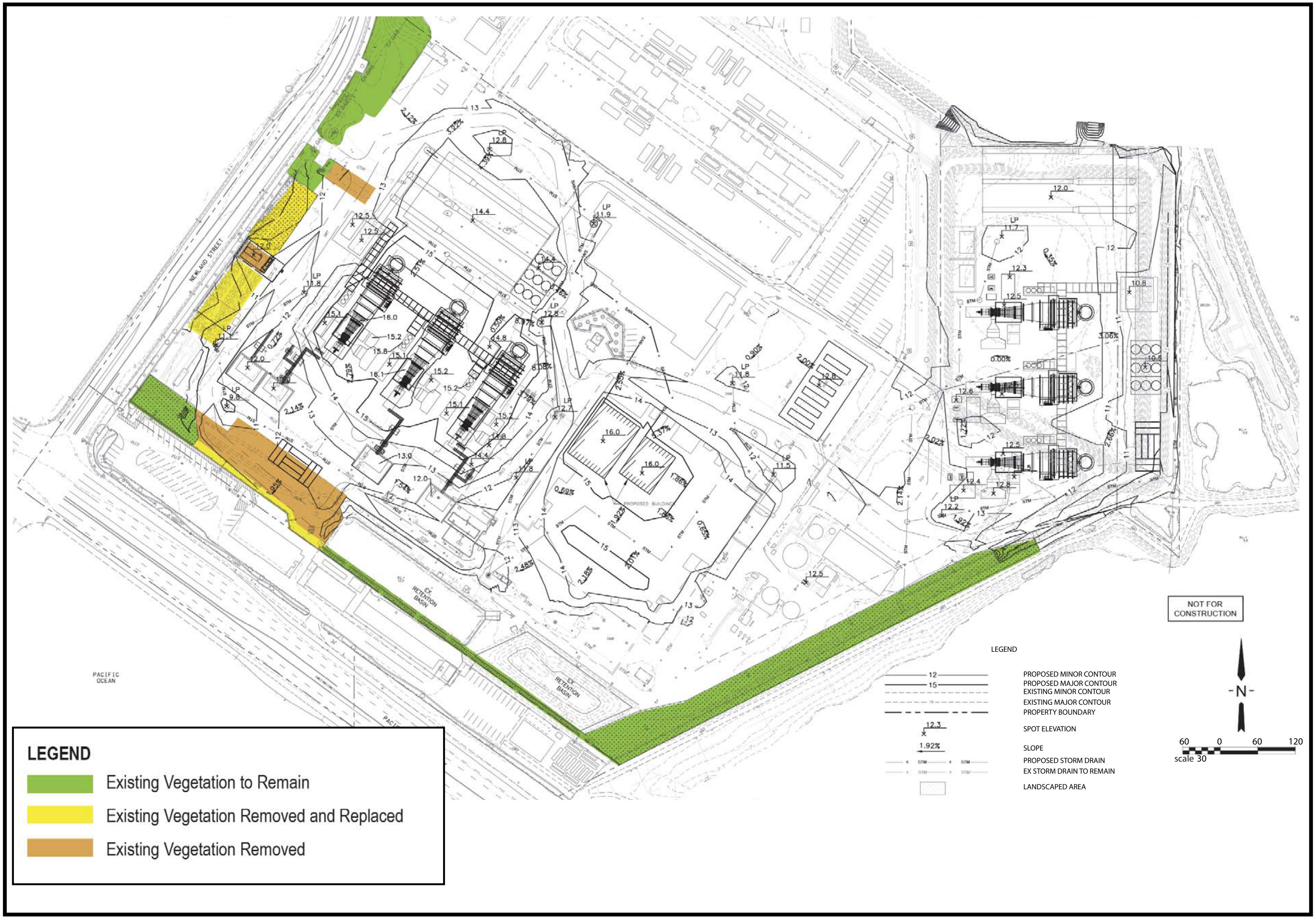
Huntington Beach Energy Project - KOP 7 - View from the Southern Bluff of the Huntington Beach Mesa, Simulated View

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AES Southland Development 2012b

VISUAL RESOURCES - FIGURE 16

Huntington Beach Energy Project - Existing On-Site Landscape Plantings That Would Be Retained, Removed, and Replaced



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AES Southland Development 2013

VISUAL RESOURCES - FIGURE 17

Huntington Beach Energy Project - KOP 5 – Simulated View as Shown in the HBEP Application for Certification

SOURCE: AES Southland Development 2012b

Huntington Beach Energy Project - Proposed Project Construction Parking Areas

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Adapted from AES Southland Development 2012b; CH2MHILL

VISUAL RESOURCES - FIGURE 19a

Huntington Beach Energy Project - Examples of Construction Screening

Example: Knitted polyethylene construction fence

Example: Bottom-locking fence slats and chain link fence

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMETAL PROTECTION DIVISION

SOURCE: http://www.fencescreen.com

Example: Pre-printed mesh fabric

Example: Printable mesh vinyl construction fence

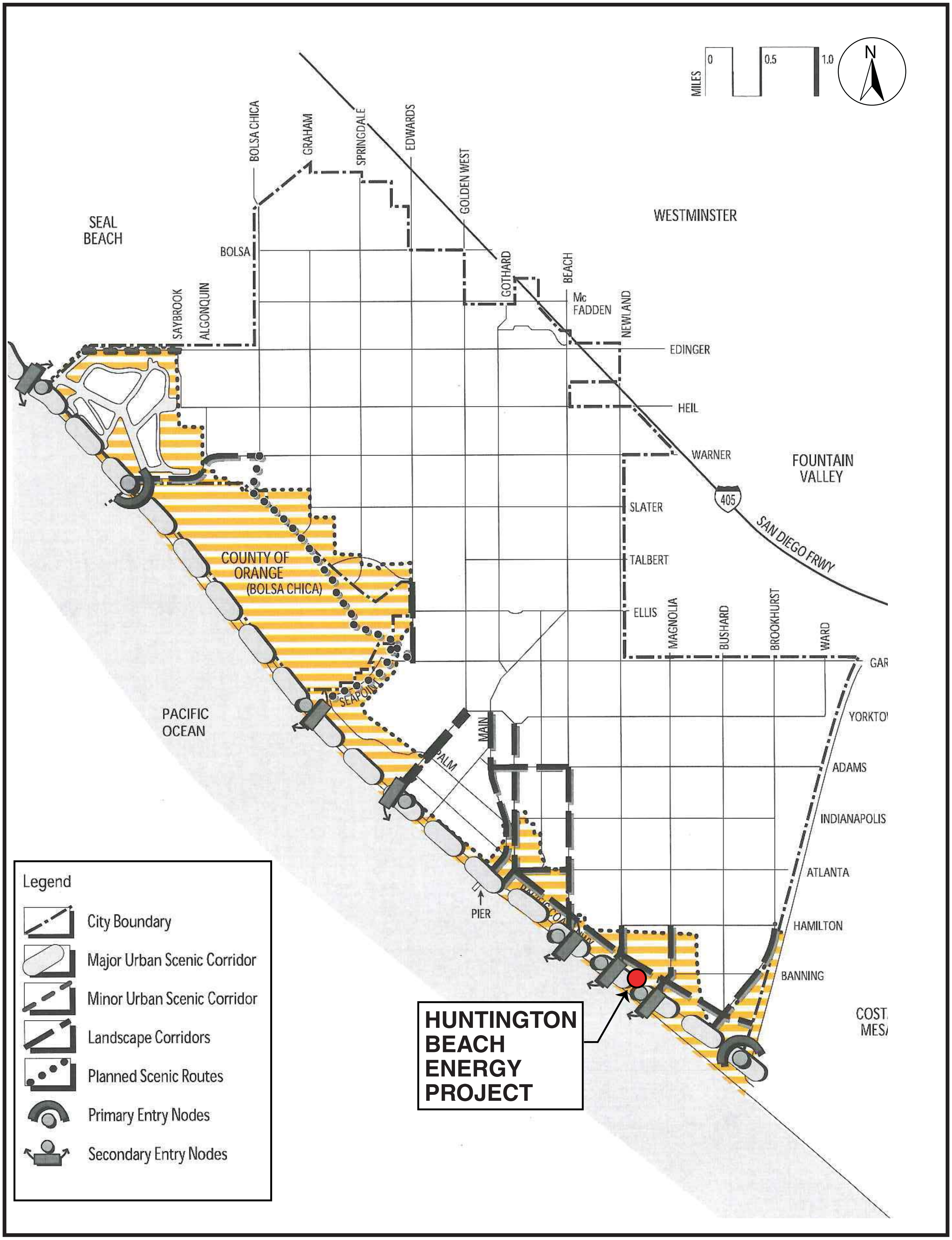
VISUAL RESOURCES - FIGURE 20
Huntington Beach Energy Project - Cumulative Projects

VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCES: Bing - USGS Aerial Image, CH2MHill, Energy Commission Staff

VISUAL RESOURCES - FIGURE 21

Huntington Beach Energy Project - Scenic Highways, Scenic Corridors, and Landscape Corridors



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Adapted from City of Huntington Beach 2011

WASTE MANAGEMENT

Ellie Townsend-Hough

SUMMARY OF CONCLUSIONS

Management of the waste generated during demolition[1] construction and operation of the Huntington Beach Energy Project (HBEP) would not result in any significant adverse impacts and would comply with applicable waste management laws, ordinances, regulations, and standards if the measures proposed in the Application for Certification and staff's proposed conditions of certification are implemented.

There are a number of Recognized Environmental Conditions (RECs) that could require site remediation at the existing Huntington Beach Generating Station (HBGS). Site characterization and remediation prior to the start of project construction of HBEP would be required. The HBEP project owner shall identify which areas on the proposed HBEP site require remediation and is the responsibility of the project, prior to the Final Staff Assessment (FSA).

INTRODUCTION

This Preliminary Staff Assessment (PSA) presents an analysis of issues associated with wastes generated from the proposed construction and operation of the Huntington Beach Energy Project (HBEP). It evaluates the proposed waste management plans and mitigation measures designed to reduce the risks and environmental impacts associated with handling, storing, and disposing of project-related hazardous and non-hazardous wastes. The technical scope of this analysis encompasses solid wastes existing on site and those to be generated during demolition, and facility construction and operation. Management and discharge of wastewater is addressed in the **Soil and Water Resources** section of this document. Additional information related to waste management may also be covered in the **Worker Safety & Fire Protection** and **Hazardous Materials Management** sections of this document.

The Energy Commission staff's objectives in conducting this waste management analysis are to ensure that:

- the management of project wastes would be in compliance with all applicable laws, ordinances, regulations, and standards (LORS). Compliance with LORS ensures that wastes generated during the construction and operation of the proposed project would be managed in an environmentally safe manner.
- the disposal of project wastes would not result in significant adverse impacts to existing waste disposal facilities, or result in other waste-related significant adverse effects on the environment.
- upon project completion, the site is managed in such a way that project wastes and waste constituents would not pose a significant risk to humans or the environment.

[1] For purposes of this section, unless otherwise specified, "demolition" refers to activities associated with the removal of Units 1, 2, and 5 from the existing Huntington Beach Generating Station. Activities associated with the removal of Units 3 and 4 are subject to the Energy Commission's conditions of certification in 00-AFC-13C

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The following federal, state, and local environmental laws, ordinances, regulations, and standards (LORS) have been established to ensure the safe and proper management of both solid and hazardous wastes in order to protect human health and the environment. Project compliance with the various LORS is a major component of staff's determination regarding the significance and acceptability of the HBEP with respect to management of waste.

Waste Management Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
Federal	
Title 42, United States Code, §§ 6901, et seq. Solid Waste Disposal Act of 1965 (as amended and revised by the Resource Conservation and Recovery Act of 1976, et al.)	The Solid Waste Disposal Act, as amended and revised by the Resource Conservation and Recovery Act (RCRA) et al., establishes requirements for the management of solid wastes (including hazardous wastes), landfills, underground storage tanks, and certain medical wastes. The statute also addresses program administration, implementation, and delegation to states, enforcement provisions, and responsibilities, as well as research, training, and grant funding provisions. RCRA Subtitle C establishes provisions for the generation, storage, treatment, and disposal of hazardous waste, including requirements addressing: • generator record keeping practices that identify quantities of hazardous wastes generated and their disposition; • waste labeling practices and use of appropriate containers; • use of a manifest when transporting wastes; • submission of periodic reports to the United States Environmental Protection Agency (U.S. EPA) or other authorized agency; and • corrective action to remediate releases of hazardous waste and contamination associated with RCRA-regulated facilities. RCRA Subtitle D establishes provisions for the design and operation of solid waste landfills. RCRA is administered at the federal level by U.S. EPA and its 10 regional offices. The Pacific Southwest regional office (Region 9) implements U.S. EPA programs in California, Nevada, Arizona, and Hawaii.
Title 42, United States Code, §§ 9601, et seq. Comprehensive Environmental Response, Compensation and Liability Act	The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), also known as Superfund, establishes authority and funding mechanisms for cleanup of uncontrolled or abandoned hazardous waste sites, as well as cleanup of accidents, spills, or emergency releases of pollutants and contaminants into the environment. Among other things, the statute addresses: • reporting requirements for releases of hazardous substances; • requirements for remedial action at closed or abandoned hazardous waste sites and brownfields; • liability of persons responsible for releases of hazardous substances or waste; and • requirements for property owners/potential buyers to conduct "all appropriate inquiries" into previous ownership and uses of the property to 1) determine if hazardous substances have been or may have been released at the site and 2) establish that the owner/buyer did not cause or contribute to the release. A Phase I Environmental Site Assessment is commonly used to satisfy CERCLA "all appropriate inquiries" requirements. •

Title 40, Code of Federal Regulations (CFR), Subchapter I – Solid Wastes	These regulations were established by U.S. EPA to implement the provisions of the Solid Waste Disposal Act and RCRA (described above). Among other things, the regulations establish the criteria for classification of solid waste disposal facilities (landfills), hazardous waste characteristic criteria and regulatory thresholds, hazardous waste generator requirements, and requirements for management of used oil and universal wastes. • Part 246 addresses source separation for materials recovery guidelines. • Part 257 addresses the criteria for classification of solid waste disposal facilities and practices. • Part 258 addresses the criteria for municipal solid waste landfills. • Parts 260 through 279 address management of hazardous wastes, used oil, and universal wastes (i.e., batteries, mercury-containing equipment, and lamps). U.S. EPA implements the regulations at the federal level. However, California is an authorized state so the regulations are implemented by state agencies and authorized local agencies in lieu of U.S. EPA.
Title 49, CFR, Parts 172 and 173 Hazardous Materials Regulations	U.S. Department of Transportation established standards for transport of hazardous materials and hazardous wastes. The standards include requirements for labeling, packaging, and shipping of hazardous materials and hazardous wastes, as well as training requirements for personnel completing shipping papers and manifests. Section 172.205 specifically addresses use and preparation of hazardous waste manifests in accordance with Title 40, CFR, section 262.20.
State	
California Health and Safety Code, Chapter 6.5, §§ 25100, et seq. Hazardous Waste Control Act of 1972, as amended	This California law creates the framework under which hazardous wastes must be managed in California. The law provides for the development of a state hazardous waste program that administers and implements the provisions of the federal RCRA program. It also provides for the designation of California-only hazardous wastes and development of standards (regulations) that are equal to or, in some cases, more stringent than federal requirements. The California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC) administers and implements the provisions of the law at the state level. Certified Unified Program Agencies (CUPAs) implement some elements of the law at the local level.
Title 22, California Code of Regulations (CCR), Division 4.5 Environmental Health Standards for the Management of Hazardous Waste	These regulations establish requirements for the management and disposal of hazardous waste in accordance with the provisions of the California Hazardous Waste Control Act and federal RCRA. As with the federal requirements, waste generators must determine if their wastes are hazardous according to specified characteristics or lists of wastes. Hazardous waste generators must obtain identification numbers, prepare manifests before transporting the waste off site, and use only permitted treatment, storage, and disposal facilities. Generator standards also include requirements for record keeping, reporting, packaging, and labeling. Additionally, while not a federal requirement, California requires that hazardous waste be transported by registered hazardous waste transporters. The standards addressed by Title 22, CFR include: • Identification and Listing of Hazardous Waste (Chapter 11, §§ 66261.1, et seq.) • Standards Applicable to Generators of Hazardous Waste (Chapter 12, §§ 66262.10, et seq.) • Standards Applicable to Transporters of Hazardous Waste (Chapter 13, §§ 66263.10, et seq.)

	• Standards for Universal Waste Management (Chapter 23, §§ 66273.1, et seq.) • Standards for the Management of Used Oil (Chapter 29, §§ 66279.1, et seq.) • Requirements for Units and Facilities Deemed to Have a Permit by Rule (Chapter 45, §§ 67450.1, et seq.) The Title 22 regulations are established and enforced at the state level by DTSC. Some generator standards are also enforced at the local level by CUPAs.
California Health and Safety Code, Chapter 6.11 §§ 25404–25404.9 Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program)	The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of the six environmental and emergency response programs listed below: • Aboveground Storage Tank Program • Business Plan Program • California Accidental Release Prevention (CalARP) Program • Hazardous Material Management Plan / Hazardous Material Inventory Statement Program • Hazardous Waste Generator / Tiered Permitting Program • Underground Storage Tank Program The state agencies responsible for these programs set the standards for their programs while local governments implement the standards. The local agencies implementing the Unified Program are known as Certified Unified Program Agencies (CUPAs). Orange County Department of Environmental Health is the area CUPA. Note: The Waste Management analysis only considers application of the Hazardous Waste Generator/Tiered Permitting element of the Unified Program. Other elements of the Unified Program may be addressed in the **Hazardous Materials Management** and/or **Worker Health and Safety** analysis sections.
Title 27, CCR, Division 1, Subdivision 4, Chapter 1, §§ 15100, et seq. Unified Hazardous Waste and Hazardous Materials Management Regulatory Program	While these regulations primarily address certification and implementation of the program by the local CUPAs, the regulations do contain specific reporting requirements for businesses. • Article 9 – Unified Program Standardized Forms and Formats (§§ 15400–15410). • Article 10 – Business Reporting to CUPAs (§§ 15600–15620).
Public Resources Code, Division 30, §§ 40000, et seq. California Integrated Waste Management Act of 1989.	The California Integrated Waste Management Act of 1989 (as amended) establishes mandates and standards for management of solid waste. Among other things, the law includes provisions addressing solid waste source reduction and recycling, standards for design and construction of municipal landfills, and programs for county waste management plans and local implementation of solid waste requirements. The act was amended in 2011 (AB 341) to include a legislative declaration of a state policy goal that not less than 75 percent of solid waste generated be source reduced, recycled, or composted by the year 2020. The 2011 amendments expand recycling to businesses and apartment buildings; require the state to develop programs to recycle three-quarters of generated waste; and require commercial and public entities that generate more than four cubic yards of commercial solid waste per week, and multifamily residential dwellings of five units or more, to arrange for recycling services beginning July 1, 2012.

Title 14, CCR, Division 7, § 17200, et seq. California Integrated Waste Management Board	These regulations further implement the provisions of the California Integrated Waste Management Act and set forth minimum standards for solid waste handling and disposal. The regulations include standards for solid waste management, as well as enforcement and program administration provisions. • Chapter 3 – Minimum Standards for Solid Waste Handling and Disposal. • Chapter 3.5 – Standards for Handling and Disposal of Asbestos Containing Waste. • Chapter 7 – Special Waste Standards. • Chapter 8 – Used Oil Recycling Program. • Chapter 8.2 – Electronic Waste Recovery and Recycling. •
California Health and Safety Code, Division 20, Chapter 6.5, Article 11.9, §25244.12, et seq. Hazardous Waste Source Reduction and Management Review Act of 1989 (also known as SB 14).	This law was enacted to expand the state's hazardous waste source reduction activities. Among other things, it establishes hazardous waste source reduction review, planning, and reporting requirements for businesses that routinely generate more than 12,000 kilograms (~ 26,400 pounds) of hazardous waste in a designated reporting year. The review and planning elements are required to be done on a 4-year cycle, with a summary progress report due to DTSC every 4th year.
Title 22, CCR, § 67100.1 et seq. Hazardous Waste Source Reduction and Management Review.	These regulations further clarify and implement the provisions of the Hazardous Waste Source Reduction and Management Review Act of 1989 (noted above). The regulations establish the specific review elements and reporting requirements to be completed by generators subject to the act.
California Health and Safety Code Section 101480 101490	These regulations authorize a local officer, such as the director of the Orange County Department of Environmental Health to enter into voluntary agreements for the oversight of remedial action at sites contaminated by wastes.
Title 22, CCR, Chapter 32, §67383.1 – 67383.5	This chapter establishes minimum standards for the management of all underground and aboveground tank systems that held hazardous waste or hazardous materials, and are to be disposed, reclaimed or closed in place.
Title 8, CCR §1529 and §5208	These regulations require the proper removal of asbestos containing materials in all construction work and are enforced by California Occupational Safety and Health Administration (Cal-OSHA).
Title 14, Chapter 9 Division 7 –(AB 939)	AB 939 established the organization, structure, and mission of California Integrated Waste Management Board (CIWMB) in 1989. AB 939 not only mandated local jurisdictions to meet numerical diversion goals of 25% by 1995 and 50% by 2000, but also established an integrated framework for program implementation, solid waste planning, and solid waste facility and landfill compliance. Other elements included encouraging resource conservation and considering the effects of waste management operations. The diversion goals and program requirements are implemented through a disposal based reporting system by local jurisdictions under CIWMB regulatory oversight. Facility compliance requirements are implemented under a different approach primarily through local government enforcement agencies. Cal Recycle, formerly known as the CIWMB, is the state's leading authority on recycling, waste reduction, and product reuse officially known as the Department of Resources Recycling and Recovery

Cal OSHA's Lead in Construction Standard is contained in Title 8, Section 1532.1 of the California Code of Regulations	The regulations address all of the following areas: permissible exposure limits (PELs); exposure assessment; compliance methods; respiratory protection; protective clothing and equipment; housekeeping; medical surveillance; medical removal protection (MRP); employee information, training, and certification; signage; record keeping; monitoring; and agency notification.
Title 17, CCR, Division 1, Chapter 8, Section 35001	Requirements for lead hazard evaluation and abatement activities, accreditation of training providers, and certification of individuals engaged in lead-based paint activities.
Local	
South Coast Air Quality Management District (SCAQMD) Rule 1403	This rule establishes survey requirements, notification and work practice requirements to prevent asbestos emissions from emanating during renovation and demolition activities. SCAQMD Rule 1403 incorporates the requirements of the federal asbestos requirements found in National Emissions Standard for Hazardous Air Pollutants (NESHAP) in code of Federal Regulations (CFR) Title 40, Part 61, Subpart M.
Huntington Beach Fire Department City Specifications Underground Storage Tanks (city Spec 418). Aboveground Storage Tanks (City Spec 425), Soil Cleanup Standards (City Specs 431-92)	The Huntington Beach Fire Department administers the Hazardous Waste, Underground Storage Tank, and Aboveground Petroleum Storage Tank programs
Orange County Integrated Waste Management Plan	The plan provides guidance for local management of solid waste and household hazardous waste (incorporates the county's Source Reduction and Recycling Elements, which detail means of reducing commercial and industrial sources of solid waste).
Orange County Health Care Agency - Environmental Health Division, Hazardous Waste Inspection Program	Hazardous Material Division is the Certified Unified Program Agency (CUPA) for Orange County that regulates and conducts inspections of businesses that handle hazardous materials, hazardous wastes, and/or have underground storage tanks. Hazardous Material Division programs include assistance with oversight on property re-development (i.e., brownfields) and voluntary or private oversight cleanup assistance.
Policy	
Construction & Demolition (C&D) Recycling and Reuse Program Policy	This policy and ensuing program are designed to assist the county in compliance with this state mandate. The Integrated Waste Management Act of 1989 (AB939) required cities and counties to reduce, by 50%, the amount of waste disposed of in landfills by the year 2000 and beyond or potentially incur fines of up to $10,000 per day.

SETTING

Proposed Project

The proposed project site would be located within the HBGS site on a 28.6-acre site at 21730 Newland Street, in Huntington Beach, Orange County, California. The Assessor's Parcel Numbers for HBEP are 114-150-82 and 114-150-96 (HBEP 2012a, page 1-4). HBGS is a highly disturbed industrial brownfield site. The site is bordered to the north and east by the Huntington Beach Channel and residential areas, to the west by manufactured homes/recreational vehicle park, and to the south and southwest by the Huntington Beach State Park and Pacific Ocean, and the southeast by Huntington Beach Wetland

Preserve/Magnolia March wetlands (HBEP 2012a,page1-2). The ASCON Landfill site is a state Superfund site located to the northeast of HBGS (HBEP 2012a, Appendix 5.14A, page 15). Records indicate that groundwater contamination is known to exist at the ASCON site and there is potential for the contaminated groundwater to have migrated to the HBGS. This potential for contaminant migration from the ASCON Landfill site is identified as an area of potential concern.

HBGS currently consists of five units (Units 1 through 5). Units 1 and 2 are in operation. Units 3 and 4 were decommissioned in 2012 and replaced by synchronous condensers[2], and Unit 5, a peaking unit, was retired in 2002. Demolition will begin with decommissioned peaker Unit 5 and the east fuel oil storage tank and the JP4 storage tank (see **Waste Management Figure 1**). HBEP Block 1 would be constructed where Unit 5 and the two fuel oil storage tanks are located. HBGS Units 3 and 4 are owned by Edison Mission Huntington Beach, LLC, and their demolition is not considered part of the HBEP (HBEP 2012n Data Response 70). HBEP Block 2 will be constructed on the site of Units 3 and 4 (HBEP 2012n Data Response 70). Units 1 and 2 will be demolished after the construction of HBEP Block 2 (HBEP 2012a, page 5.14-1).

The demolition of HBGS Units 1, 2, and 5 will produce a variety of mixed wastes, such as soil, wood, metal, and concrete, etc. Units 3 and 4 are subject to the Energy Commission's compliance oversight in 00-AFC-13C, and will be include in the Cumulative Impact analysis. Waste will be recycled where practical and non-recyclable waste will be deposited in a Class III landfill. The hazardous waste generated during this phase of the project will consist of asbestos debris, heavy metal dust, used oils, universal wastes, solvents, and empty hazardous waste material containers (HBEP 2012a, § 5.14.4). Universal wastes are hazardous wastes that contain mercury, lead, cadmium, copper, and other substances hazardous to human and environmental health. Examples of universal wastes are batteries, fluorescent tubes, and some electronic devices.

Operation and maintenance of the plant and associated facilities will generate a variety of wastes, including a small quantity of hazardous wastes. To control air emissions, the project's turbine units would use selective catalytic reduction and oxidation catalyst equipment and chemicals, which generate both solid and hazardous waste.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

This waste management analysis addresses: a) existing project site conditions and the potential for contamination associated with prior activities on or near the project site, and b) the impacts from the generation and management of wastes during project construction and operation.

A. For any site in California proposed for the construction of a power plant, the applicant must provide documentation about the nature of any potential or existing releases of hazardous substances or contamination at the site. If potential or existing releases or contamination at the site are identified, the significance of the release or contamination

[2] Synchronous condensers provide voltage support to the grid, but do not generate electricity.

would be determined by site-specific factors, including, but not limited to: the amount and concentration of contaminants or contamination; the proposed use of the area where the contaminants/contamination is found; and any potential pathways for workers, the public, sensitive species or environmental areas could be exposed to the contaminants. Any unmitigated contamination or releases of hazardous substances that pose a risk to human health or environmental receptors would be considered significant by Energy Commission staff.

As a first step in documenting existing site conditions, the Energy Commission's power plant site certification regulations require that a Phase I Environmental Site Assessment (ESA) be prepared[3] and submitted as part of an application for certification. The Phase I ESA is conducted to identify any conditions indicative of releases and threatened releases of hazardous substances at the site and to identify any areas known to be contaminated (or a source of contamination) or near the site.

In general, the Phase I ESA uses a qualified environmental professional to conduct inquiries into past uses and ownership of the property, research hazardous substance releases and hazardous waste disposal at the site and within a certain distance of the site, and visually inspect the property, making observations about the potential for contamination and possible areas of concern. After conducting all necessary file reviews, interviews, and site observations, the environmental professional then provides findings about the environmental conditions at the site. In addition, since the Phase I ESA does not include sampling or testing, the environmental professional may also give an opinion about the potential need for any additional investigation. Additional investigation may be needed, for example, if there were significant gaps in the information available about the site, an ongoing release is suspected, or to confirm an existing environmental condition.

If additional investigation is needed to identify the extent of possible contamination, a Phase II ESA may be required. The Phase II ESA usually includes sampling and testing of potentially contaminated media to verify the level of contamination and the potential for remediation at the site.

In conducting its assessment of a proposed project, Energy Commission staff will review the project's Phase I ESA and work with the appropriate oversight agencies as necessary to determine if additional site characterization work is needed and if any mitigation is necessary at the site to ensure protection of human health and the environment from any hazardous substance releases or contamination identified.

B. Regarding the management of project-related wastes generated during construction and operation of the proposed project, staff reviewed the applicant's proposed solid and hazardous waste management methods and determined if the methods proposed are consistent with the LORS identified for waste disposal and recycling. The federal, state, and local LORS represent a comprehensive regulatory system designed to protect human health and the environment from impacts associated with management of both non-hazardous and hazardous wastes. Absent any unusual circumstances,

[3] Title 20, California Code of Regulations, section 1704(c) and Appendix B, section (g)(12)(A). Note that the Phase I ESA must be prepared according to American Society for Testing and Materials protocol or an equivalent method agreed upon by the applicant and the Energy Commission staff.

staff considers project compliance with LORS to be sufficient to ensure that no significant impacts would occur as a result of project waste management.

Staff then reviewed the capacity available at off-site treatment and disposal sites and determines whether or not the proposed power plant's waste would have a significant impact on the volume of waste a facility is permitted to accept. Staff used a waste volume threshold equal to 10 percent of a disposal facility's remaining permitted capacity to determine if the impact from disposal of project wastes at a particular facility would be significant.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Existing Site Contamination

The Huntington Beach Generating Station began operation in 1958 under the ownership of Southern California Edison (SCE). The power plant utilized fuel oil for production of electricity through its five generating units until the late 1980s, when the generating units were converted to natural gas operation. AES Huntington Beach, LLC, acquired the HBGS from SCE in 1998. Current operation at the HBGS consists of two steam turbine generating units with a total capacity of 430 MW. The proposed HBEP will be built within the footprint of the operating Huntington Beach Electrical Generating Station. Each operating unit consists of a boiler, turbine and other support facilities.

A Phase I Environmental Site Assessment (ESA) dated February 2012, was prepared by EMS for the Huntington Beach Energy Project. The ESA encompassed 46.23 acres located on four parcels which included the project site. The HBEP would be built on two of the four parcels. The ESA was completed in accordance with the American Society for Testing and Materials Standard Practice E 1527-05 for ESAs. The Phase I ESA is included as Appendix 5.14A of the project Application for Certification (AFC) (HBEP 2012a, Appendix 5.14A). The RECs and Historical RECs identified are included in **Waste Management Table 2**.

The project owner would come in contact with many of the RECs listed in **Waste Management Table 2** during demolition. The project owner or SCE has indicated they would contact the regulatory agency and, when required complete remediation, of contaminated areas prior to construction. SCE would possibly be accountable for some of the environmental liability associated with the past operation. SCE is currently working with the Department of Toxic Substance Control on the closure of the HBGS retention basin site (Jamison and Associates 2012).

According to the Phase I ESA, per the Department of Oil Gas and Geothermal Resources (DOGGR) Online Mapping System, there is one plugged oil and gas well on the southwestern portion of the HBGS site between Units 1 and 2 and the retention ponds. There are also numerous wells including two plugged oil and gas wells located east of the North and East fuel oil storage tanks. North of the North fuel oil storage tank is an abandoned dry hole (see **Waste Management Figure 1**). Additional information on the abandoned wells is included in the **Geology and Paleontology** section (see Condition of Certification **GEO-2**).

Prior to the Final Staff Assessment (FSA) HBEP owners should specify which areas identified in **Waste Management Table 2** require cleanup or remediation prior to construction. Once these areas have been identified the applicant should be required to comply with a condition of certification similar to Condition of Certification **WASTE-1**, which would require completion of Phase II investigations to evaluate the extent of contamination and identify the necessary remedial actions. If a site is considered contaminated, a Phase II environmental site assessment may be conducted, ASTM test E1903, a more detailed investigation involving chemical analysis for hazardous substances and/or petroleum hydrocarbons is performed. It would also require the applicant to coordinate with the appropriate regulatory authority that would otherwise regulate the activity if not for the in-lieu authority of the Energy Commission. The condition would then require monitoring and reporting on the progress of remediation of the various areas of contamination located on the HBEP site. Staff will finalize this condition of certification once the additional data on sites needing additional characterization are provided by the applicant.

Staff proposes Condition of Certification **WASTE-1,** which would ensure the applicant adequately characterizes the site and completes remediation in accordance with the Energy Commission's conditions of certification in 00-AFC-13C as well as applicable LORS. Staff proposes Condition of Certification **WASTE-1** requiring that any additional work must be conducted under the oversight of the Energy Commission Compliance Project Manager (CPM), the Department of Toxic Substances Control (DTSC), the Huntington Beach Fire Department and Orange County. **WASTE-2** requires that the project owner submit the South Coast Air Quality Management District's (SCAQMD) Asbestos Notification Form for review and approval prior to removal and disposal of asbestos. All friable asbestos (Class I) collected during demolition activities would be disposed of as hazardous waste.

Furthermore, staff proposes Conditions of Certification **WASTE-3** and **WASTE-4** be adopted to address any soil contamination contingency that may be encountered during project construction. **WASTE-3** would require that an experienced and qualified Professional Engineer or Professional Geologist be available for consultation in the event contaminated soil not previously identified is encountered. If contaminated soil is identified, **WASTE-4** would require that the Professional Engineer or Professional Geologist inspect the site, determine what is required to characterize the nature and extent of contamination, and provide a report to the CPM with findings and recommended actions. **WASTE–4** also addresses identification and investigation of any previously unidentified soil or groundwater contamination that may be encountered.

Demolition and Construction Impacts and Mitigation

Site preparation, demolition, and construction of the proposed power plant and associated facilities would last approximately 42 months and generate both nonhazardous and hazardous wastes in solid and liquid forms (HBEP 2012a, § 5.14.4.1). Before demolition and construction can begin, the project owner would be required to develop and implement a Demolition and Construction Waste Management Plan, per proposed Condition of Certification **WASTE-5**.

Nonhazardous Wastes

Nonhazardous waste would be generated from the demolition of Huntington Beach Generating Station's Units 1, 2, and 5 and the construction of HBEP. Roughly 25,544 tons of demolition nonhazardous waste and 390 tons of construction nonhazardous waste will be generated as part of the HBEP project (HBEP 2012a, page 5.14-11). Demolition and construction waste will consist of wood, glass, plastic, paper, scrap metals, concrete, and asphalt. All non-hazardous wastes would be recycled to the extent possible and non-recyclable wastes would be collected by a licensed hauler and disposed in a solid waste disposal facility, in accordance with Title 14, California Code of Regulations, section 17200 et seq. During demolition, approximately 2,350 tons of concrete and 22,000 tons of metal debris would be recycled (HBEP 2012a, page 5.14-6). During construction, 288 tons of paper, wood, glass and plastics will be generated and recycled where practical. Approximately 36 tons of metal will be recycled (HBEP 2012a, Table 5.14-2).

Waste Management Table 2
Recognized Environmental Conditions

Areas of Concern	Type of contamination	**Regulating Agency**
Units 1 & 2 Retention Ponds	Metals, VOCs	DTSC – by stipulated order
Plugged oil & gas wells	Several	Huntington Beach Fire Department and the California Department of Conservation, Division of Oil, Gas and Geothermal Resources (DOGGR)
North fuel oil storage tank	Fuel oil	Huntington Beach Fire Department
Aboveground Storage Tanks	Unit 5 Peaker Fuel Oil Tank – 21,500 Barrels (64 Foot Diameter x 40 Feet Tall) Large Oil Tank – 220,000 Barrels (200 Foot Diameter x 40 Feet Tall)	Huntington Beach Fire Department
Aboveground & underground pipelines	Fuel oil	Huntington Beach Fire Department
Groundwater	Metals, VOCs, 1,4-dioxane	DTSC – thru corrective action
Several spills	Petroleum	DTSC – thru corrective action
Concrete degreasing pits		DTSC – thru corrective action
Near retention basin	TCE, PCE	
Machine shop area	Various chemicals	
Transformers	1984 rupture of Number 4 Auxiliary transformer	
Number of USTs	Various	Huntington Beach Fire Department, Orange County Health Care Agency
Contaminated Groundwater (adjacent to the property)	Various	DTSC
Asbestos	Site buildings were constructed prior to 1980.	South Coast Air Quality Management District
Lead	Site buildings were constructed prior to 1980.	

The California Department of Resources Recycling and Recovery (now CalRecycle, formerly California Integrated Waste Management Board (CIWMB)) is responsible for recycling, waste reduction, and product reuse programs in California. CalRecycle also promotes innovation in technology to encourage economic and environmental sustainability. The 2008 California Green Building Standards Code Requires all construction projects to develop a recycling plan to divert and/or recycle at least 50 percent of waste generated during construction, (CalGreen Building Standards Code Section 708 construction Waste Reduction, Disposal and Recycling).

Adoption of Condition of Certification **WASTE-5** would facilitate proper management of project demolition and construction wastes since the Orange County maintains a Construction and Demolition (C&D) Recycling and Reuse policy and program. Staff proposes Condition of Certification **WASTE-5** requiring the project owner to develop and implement a Construction Waste Management Plan and submit copies of C&D paperwork to the CPM. These conditions would require the applicant to identify type, volume, and waste disposal and recycling methods to be used during construction of the facility. Staff believes that compliance with proposed Conditions of Certification **WASTE-5** will assist the applicant's compliance with the CalGreen Building Code requirements.

Nonhazardous liquid wastes would also be generated during construction, including sanitary wastes, dust suppression and stormwater drainage, and equipment wash and test water. Sanitary wastes would be collected in portable, self-contained chemical toilets and pumped periodically for disposal at an appropriate facility. Potentially contaminated equipment wash and/or test water would be contained at designated areas, tested to determine if hazardous, and either discharged to the storm water retention basin (if nonhazardous) or transported to an appropriate treatment/disposal facility. Please see the **Soil and Water Resources** section of this document for more information on the management of project wastewater.

Hazardous Wastes

The HBEP will produce hazardous waste during demolition and construction. It is anticipated that 1,205 tons of hazardous waste will be generated during demolition. The waste generated will include: asbestos waste, electrical equipment, used oils, universal wastes and lead-acid storage batteries (HBEP 2012a page 5.14-13). Demolition of Units 1, 2 and 5 would generate 700 tons of asbestos that would be disposed of in a permitted facility (HBEP 2012n, Data Request 71). The South Coast Air Quality Management District (SCAQMD) Rule 1403 requires the owner or operator of a demolition or renovation to submit an Asbestos Demolition or Renovation Operation Plan at least 10 working days before any asbestos stripping or removal work begins. **WASTE-2** requires that the project owner submit the SCAQMD Asbestos Notification Form for review and approval prior to removal and disposal of asbestos. This program ensures there will be no release of asbestos that could impact public health and safety. The generation of hazardous wastes anticipated during construction includes empty hazardous material containers, solvents, waste paint, oil absorbents, used oil, oily rags, batteries, and cleaning wastes. The amount of waste generated would be minor if handled in the manner identified in the AFC (HBEP 2012a, § 5.14.1.2.2).

Wastes would be accumulated on site for less than 90 days and then properly manifested, transported, and disposed at a permitted hazardous waste management facility by licensed hazardous waste collection and disposal companies. Staff reviewed the disposal methods described in AFC section 5.14.4.1.2 and concluded that all wastes would be disposed in accordance with all applicable LORS. Should any construction waste management-related enforcement action be taken or initiated by a regulatory agency, the project owner would be required by proposed Condition of Certification **WASTE-6** to notify the Energy Commission's Compliance Project Manager (CPM) whenever the owner becomes aware of any such action.

In the event that construction excavation, grading, or trenching activities for the proposed project encounter potentially contaminated soils and/or specific handling, disposal, and other precautions that may be necessary pursuant to hazardous waste management LORS, staff finds that proposed Conditions of Certification **WASTE-3** and **WASTE-4** would be adequate to address any soil contamination contingency that may be encountered during construction of the project and would ensure compliance with LORS. Absent any unusual circumstances, staff considers project compliance with LORS to be sufficient to ensure that no significant impacts would occur as a result of project waste management activities.

Operation Impacts and Mitigation

The proposed HBEP would generate non-hazardous and hazardous wastes in both solid and liquid forms under normal operating conditions. (HBEP 2012a Table 5.14-4) of the project AFC gives a summary of the operation waste streams, expected waste volumes and generation frequency, and management methods proposed. Before operations can begin, the project owner would be required to develop and implement an Operation Waste Management Plan pursuant to proposed Condition of Certification **WASTE-7**.

Non-Hazardous Solid Wastes

The generation of as much as 39 tons per year of non-hazardous solid wastes (including ZLD filter cake) expected during project operation include routine maintenance wastes (such as used air filters, spent deionization resins, sand and filter media), as well as domestic and office wastes (such as office paper, newsprint, aluminum cans, plastic, and glass). All non-hazardous wastes will be recycled to the extent possible, and non-recyclable wastes will be regularly transported off site to a local solid waste disposal facility (HBEP 2012a, § 5.14.1.2.3).

Non-Hazardous Liquid Wastes

Non-hazardous liquid wastes would be generated during facility operation and are discussed in the **Soil and Water Resources** section of this document.

Hazardous Wastes

The generation of hazardous wastes expected during routine project operation includes used hydraulic fluids, oils, greases, oily filters and rags, spent selective catalytic reduction catalysts, cleaning solutions and solvents, and batteries. In addition, spills and unauthorized releases of hazardous materials or hazardous wastes may generate contaminated soils or materials that may require corrective action and management as hazardous waste. Proper hazardous material handling and good housekeeping practices will help keep spill wastes to a minimum. However, to ensure proper cleanup and management of any contaminated soils or waste materials generated from hazardous materials spills, staff proposes Condition of Certification **WASTE-8** requiring the project owner/operator to report, clean up, and remediate as necessary, any hazardous materials spills or releases in accordance with all applicable federal, state, and local requirements. More information on hazardous material management, spill reporting, containment, and spill control and countermeasures plan provisions for the project are provided in the **Hazardous Materials Management** section of the PSA.

The amount of hazardous wastes generated during the operation of HBEP would be minor, 100 pounds per year, with source reduction and recycling of wastes implemented whenever possible (HBEP 2012a, Table 5.14-4). The hazardous wastes would be temporarily stored on site, transported off site by licensed hazardous waste haulers, and recycled or disposed at authorized disposal facilities in accordance with established standards applicable to generators of hazardous waste (Title 22, CCR, §§ 66262.10 et seq.). Should any operations waste management-related enforcement action be taken or initiated by a regulatory agency, the project owner would be required by proposed Condition of Certification **WASTE-6** to notify the CPM whenever the owner becomes aware of any such action.

Impact on Existing Waste Disposal Facilities

Non-Hazardous Wastes

The HBEP facility would generate nonhazardous solid waste that would add to the total waste generated in Orange County, California. The proposed project, will generate 56,389 cubic yards of solid waste during demolition, approximately 2,600[4] cubic yards of solid waste during construction, and approximately 26 cubic yards per year would be produced during operation. Nonhazardous waste would be disposed in a California Class III landfill (HBEP 2012a Section 5.14).

CalRecycle is the state agency responsible for implementing the California Integrated Waste Management Act and is the state's leading authority on recycling, waste reduction, and product reuse.

The county is required to submit an Integrated Waste Management Plan (IWMP) in accordance with state waste diversion mandates for jurisdictions (Chapter 764, Statutes of 1999). The Source Reduction and Recycling Element (SRRE), a Household Hazardous Waste Element (HHWE) and a Non-Disposal Facility Element (NDFE) are all elements that comprise the IWMP. For enforcement purposes, jurisdictions are evaluated on the effectiveness of their SRRE.

Once a California jurisdiction adopts an SRRE, it must implement the SRRE to the best of its ability. The jurisdiction can update the SRRE through CalRecycle's electronic annual reporting system at any time as diversion programs need to be modified (e.g., a new program to address commercial waste and the expansion of educational programs.)

To help CalRecycle determine whether a jurisdiction is taking the appropriate steps to implement its SRRE, the jurisdiction submits an annual report to CalRecycle. The annual report includes the jurisdiction's program information and per capita disposal information (Note: The per capita disposal data is derived from the statewide disposal reporting system). CalRecycle requires the county to report to the disposal reporting system all waste disposed in the county pursuant to Title 14, CCR, Sections 18800-18814.11. The disposal data is compiled for each jurisdiction to measure, whether the jurisdiction has met its 50 percent equivalent diversion requirement.

[4] The volume estimates (cubic yards) for solid/non-hazardous waste are staff generated numbers based on a conversion factor of approximately 906 pounds per cubic yard (taking into account amount of ferrous metal and cement) and 300 pounds per cubic yard for construction waste (HBEP Tables 5.14-1, 5.14-2 and Table 5.14-3). See http://www.calrecycle.ca.gov/lgcentral/library/dsg/apndxi.htm and city of Antioch conversion factors.

CalRecycle reviews each jurisdiction's annual report information and conducts site visits to verify program implementation. Depending on the particular review cycle of the jurisdiction, CalRecycle staff review the jurisdiction's progress toward implementation of its SRRE, as well as its overall achievement of the 50 percent diversion requirement.

Orange County is required to submit an annual report that is reviewed by CalRecycle at a minimum every four years to determine if it is meeting the 50 percent diversion requirement and implementing its programs. Condition of Certification **WASTE-5** would require the project owner to submit a construction waste management plan for approval by the Energy Commission compliance project manager (CPM) and for review by Orange County that demonstrates that they met the construction waste diversion requirements of 50 percent pursuant to the CalGreen Building Codes. Pursuant to recommended Condition of Certification **WASTE-7,** the applicant would also be required to submit to the CPM for approval, and to Orange County for review, an Operation Waste Management Plan (OWMP), discussing how the project would divert to the maximum extent feasible the recyclable materials that would be generated during construction and operation of the facility. The CPM and county would determine if the plan is diverting recyclables to the maximum extent feasible. If the OWMP is approved, as a condition prior to issuance of the project's building permit, the applicant would be required to divert all materials from the solid waste stream that could reasonably be diverted for alternate uses.

Waste Management Table 3 presents details of two non-hazardous (Class III) waste disposal facilities that could potentially take the non-hazardous construction and operation wastes that would be generated but could not be diverted by the HBEP. Total solid waste disposal in Orange County in 2010, was 3,360,593 tons[5]. The remaining capacity for the two Orange County landfills combined is approximately 245 million cubic yards. The total amount of non-hazardous waste generated from project construction and operation after the material has been diverted to the maximum extent feasible would contribute less than one percent of the available landfill capacity. Staff concludes that disposal of the solid wastes generated by HBEP could occur without significantly impacting the capacity or remaining life of any of these facilities.

Hazardous Wastes

Waste Management Table 3 displays information on Class III landfills in the vicinity of the project and Class I landfills available in California. The Kettleman Hills facility also accepts Class II and Class III wastes. Kettleman Hills and Buttonwillow landfills have a combined approximately 15 million cubic yards of remaining hazardous waste disposal capacity, with up to 31years of combined remaining operating lifetime (HBEP 2012a, Section 5.14.2.3).

[5] http://www.calrecycle.ca.gov/SWFacilities/Landfills/Tonnages/.

Waste Management Table 3
Recycling/Disposal Facilities

Landfill	Location	Permitted Capacity	Remaining Capacity	Estimated Closure Date
	City	Cubic yards	Cubic yards	
Class III - Nonhazardous				
Frank Bowerman Sanitary Landfill	Irvine, CA	266 million	198 million	2022
Olinda Alpha Sanitary Landfill	Brea, CA	148 million	47 million	2021
Class I -Hazardous Waste				
Chemical Waste Management- Kettleman (Class I, II, III)	Kettleman, CA	10 million	6 million*	2044
Clean Harbors Buttonwillow (Class I)	Kern, CA	14.3 million	9.2 million	2040

Source: HBEP 2012a Section 5.14.2.3

Hazardous wastes generated during construction and operation would be recycled to the extent possible and practical. Those wastes that cannot be recycled would be transported off site to a permitted treatment, storage, or disposal facility. Approximately 8,033 cubic yards of demolition hazardous waste, 53 cubic yards of construction hazardous waste and less than 100 cubic yards per year of hazardous waste would be generated from the HBEP facility. The total amount of hazardous wastes generated by the HBEP project would consume less than one percent of the 15 million cubic yards of remaining permitted capacity. Therefore, impacts from disposal of HBEP generated hazardous wastes would have a less than significant impact on the remaining capacity at Class I landfills.

The existing available capacity for the three Class III landfills that may be used to manage nonhazardous project wastes exceeds 245 million cubic yards. The total amount of nonhazardous wastes generated from construction and operation of the proposed HBEP project would consume less than 1 percent of the remaining landfill capacity. Therefore, disposal of project generated non-hazardous wastes would have a less than significant impact on Class III landfill capacity.

In addition, the two Class I disposal facilities that could be used for hazardous wastes generated by the construction and operation of the HBEP project have a combined remaining capacity in excess of 15 million cubic yards. The total amount of hazardous wastes generated by the HBEP project would consume less than 1 percent of the remaining permitted capacity. Therefore, impacts from disposal of HBEP generated hazardous wastes would also have a less than significant impact on the remaining capacity at Class I landfills.

CUMULATIVE IMPACTS AND MITIGATION

The CEQA Guidelines (Section 15355) define cumulative effects as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.”

Long-term cumulative impacts are not anticipated with the implementation of HBEP and the listed projects because each project is required to comply with CEQA guideline requirements for evaluating potential cumulative impacts, and /or obtain approval from the city prior to permitting and construction by demonstrating conformance to existing CalRecycle (Title 24) and the Orange County C&D regulations and ordinances. As proposed, the amount of non-hazardous and hazardous wastes generated during construction and operation of the HBEP would add to the total quantity of waste generated in the State of California, however, project wastes would be generated in modest quantities, approximately 26,749 tons of solid waste during demolition of Units 1, 2, and 5 (including approximately 1,205 tons of hazardous waste, 398 tons of solid waste during construction (including approximately 8 tons of hazardous waste), and 39 tons per year from construction (HBEP 2012a, page 5.14-13. Waste recycling would be employed wherever practical, and sufficient capacity is available at several treatment and disposal facilities to handle the volumes of wastes that would be generated by the project. In 2012, 3.4 million tons of solid waste was landfilled in Orange County. HBEP's contribution would be less than one percent of the county's waste generation.

COMPLIANCE WITH LORS

Energy Commission staff concludes that the proposed HBEP would comply with all applicable LORS regulating the management of hazardous and non-hazardous wastes during both facility construction and operation. The applicant is required to recycle and/or dispose hazardous and non-hazardous wastes at facilities licensed or otherwise approved to accept the wastes. Because hazardous wastes would be produced during both project construction and operation, the HBEP would be required to obtain a hazardous waste generator identification number from U.S. EPA. The HBEP would also be required to properly store, package, and label all hazardous waste; use only approved transporters; prepare hazardous waste manifests; keep detailed records; and appropriately train employees, in accordance with state and federal hazardous waste management requirements.

In the **Socioeconomics** section of this staff assessment, staff presents census information that shows that there are minority populations within one mile and six miles of the project. Since staff has added conditions of certification that would reduce the risk associated with hazardous waste to a less than significant level, staff concludes that there will be no significant impact from construction or operation of the power plant on minority populations. Therefore, there are no environmental justice issues for Waste Management.

CONCLUSIONS

Consistent with the three main objectives for staff's waste management analysis (as noted in the Introduction section of this analysis), staff provides the following conclusions:

1) After review of the applicant's proposed waste management procedures, staff concludes that project wastes would be managed in compliance with all applicable waste management LORS. Staff notes that demolition, construction and operation wastes would be characterized and managed as either hazardous or non-hazardous waste. All non-hazardous wastes would be recycled to the extent feasible, and nonrecyclable wastes would be collected by a licensed hauler and disposed of at a permitted solid waste disposal facility. Hazardous wastes would be accumulated onsite in accordance with

accumulation time limits (90,180, 270, or 365 days depending on waste type and volumes generated), and then properly manifested, transported to, and disposed of at a permitted hazardous waste management facility by licensed hazardous waste collection and disposal companies.

However, to help ensure and facilitate ongoing project compliance with LORS, staff proposes Conditions of Certification **WASTE-1** through **8**. These conditions would require the project owner to do all of the following:

- Once the HBEP project owner identifies which areas of contamination will be remediated staff proposes conditions that ensure the project site is investigated and any contamination identified is remediated as necessary, with appropriate professional and regulatory agency oversight (**WASTE-1**, **2**, **3**, and **4**).
- Prepare Construction Waste Management and Operation Waste Management Plans detailing the types and volumes of wastes to be generated and how wastes will be managed, recycled, and/or disposed of after generation (**WASTE-5** and **7**).
- Report any waste management-related LORS enforcement actions and how violations will be corrected (**WASTE-6**).
- Ensure that all spills or releases of hazardous substances are reported and cleaned-up in accordance with all applicable federal, state, and local requirements (**WASTE-8)**.

2) Existing conditions at the HBEP project site do include areas where prior site uses and/or demolition activities may have resulted in releases of hazardous substances or soil contamination. To ensure that the project site is investigated and remediated as necessary and to reduce any impacts from prior or future hazardous substance or hazardous waste releases at the site to a level of insignificance, staff proposes Conditions of Certification **WASTE-1**, **2**, **3**, **4**, **6**, and **8**. These conditions would require the project owner to ensure that the project site is investigated and remediated as necessary; demonstrate that project wastes are managed properly; and ensure that any future spills or releases of hazardous substances or wastes are properly reported, cleaned-up, and remediated as necessary. Therefore, staff concludes that construction and operation of the proposed HBEP project would not result in contamination or releases of hazardous substances that would pose a substantial risk to human health or the environment.

3) Regarding impacts of project wastes on existing waste disposal facilities, staff uses a waste volume threshold equal to ten (10) percent of a disposal facility's remaining capacity to determine if the impact from disposal of project wastes at a particular facility would be significant. The existing available capacity for the three Class III landfills that may be used to manage nonhazardous project wastes exceeds 87 million cubic yards. The total amount of nonhazardous wastes generated from construction and operation of SGGS would contribute less than 0.1 percent of the remaining landfill capacity. Therefore, disposal of project generated non-hazardous wastes would have a less than significant impact on Class III landfill capacity.

   In addition, the two Class I disposal facilities that could be used for hazardous wastes generated by the construction and operation of HBEP have a combined remaining capacity in excess of 15 million cubic yards. The total amount of hazardous wastes generated by the HBEP project would contribute less than one percent of the remaining permitted capacity. Therefore, impacts from disposal of HBEP generated hazardous wastes would also have a less than significant impact on the remaining capacity at Class I landfills.

Staff concludes that management of the waste generated during demolition, construction and operation of the HBEP project would not result in any significant adverse impacts, and would comply with applicable LORS, if the waste management practices and mitigation measures proposed in the HBEP project AFC and staff's proposed conditions of certification are implemented.

PROPOSED CONDITIONS OF CERTIFICATION

WASTE-1 The project owner shall ensure that the HBEP project site is properly characterized and remediated as necessary pursuant to the corrective action plans reviewed and approved by the Energy Commission CPM, DTSC, the Huntington Beach Fire Department and/or the Orange County Health Care Agency. In no event shall project construction commence in areas requiring characterization and remediation until the CPM determines, with confirmation from the appropriate regulatory agency, that all necessary remediation has been accomplished.

Verification: At least 30 days prior to remediation the project owner shall submit to the CPM for review and approval copies of all pertinent correspondence, Phase II Environmental Site Assessment (ESA) subsequent soil sample results, work plans, agreements, and authorizations between HBEP, and DTSC, the Huntington Beach Fire Department and/or the Orange County Health Care Agency regarding the corrective action plan requirements and activities at the HBEP project site. At least 60 days prior to the start of site mobilization, the project owner shall provide to the CPM for review and approval written notice from the appropriate regulatory agency that the HBEP site has been investigated and remediated as necessary in accordance with the corrective action plan.

WASTE-2 Prior to demolition of existing structures associated with Units 1, 2, and 5, the project owner shall complete and submit a copy of a SCAQMD Asbestos Demolition Notification Form to the CPM and the SCAQMD for approval. After receiving approval, the project owner shall remove all Asbestos Containing Material (ACM) from the site prior to demolition.

Verification: No less than sixty (60) days prior to commencement of structure demolition, the project owner shall provide the Asbestos Demolition Notification Form to the CPM for review and approval. The project owner shall inform the CPM via the monthly compliance report, of the data when all ACM is removed from the site.

WASTE-3 The project owner shall provide the resume of an experienced and qualified professional engineer or professional geologist, who shall be available for consultation during site characterization (if needed), demolition, excavation, and grading activities, to the CPM for review and approval. The resume shall show experience in remedial investigation and feasibility studies.

The professional engineer or professional geologist shall be given full authority by the project owner to oversee any earth moving activities that have the potential to disturb contaminated soil.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit the resume of the professional engineer or professional geologist to the CPM for review and approval.

WASTE-4 If potentially contaminated soil is identified during site characterization, demolition, excavation, or grading at either the proposed site or linear facilities, as evidenced by discoloration, odor, detection by handheld instruments, or other signs, the professional engineer or professional geologist shall inspect the site, determine the need for sampling to confirm the nature and extent of contamination, and provide a written report to the project owner, representatives of Department of Toxic Substances Control, and the CPM stating the recommended course of action.

Depending on the nature and extent of contamination, the professional engineer or professional geologist shall have the authority to temporarily suspend construction activity at that location for the protection of workers or the public. If, in the opinion of the professional engineer or professional geologist, significant remediation may be required, the project owner shall contact the CPM and representatives of the Department of Toxic Substances Control for guidance and possible oversight.

Verification: The project owner shall submit any final reports filed by the professional engineer or professional geologist to the CPM within 5 days of their receipt. The project owner shall notify the CPM within 24 hours of any orders issued to halt construction.

WASTE-5 The project owner shall prepare a Construction Waste Management Plan for all wastes generated during construction of the facility and shall submit the plan to the CPM for review and approval. The plan shall contain, at a minimum, the following:

- a description of all construction waste streams, including projections of frequency, amounts generated, and hazard classifications;
- management methods to be used for each waste stream, including temporary on-site storage, housekeeping and best management practices to be employed, treatment methods and companies providing treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans.
- a method for collecting weigh tickets or other methods for verifying the volume of transported and or location of waste disposal; and,
- a method for reporting to demonstrate project compliance with construction waste diversion requirements of 50 percent pursuant to the CalGreen Code and Construction and Orange County Construction & Demolition Recycling and Reuse Program.

Verification: The project owner shall submit the Construction Waste Management Plan to the CPM for approval no less than 30 days prior to the initiation of construction activities at the site.

The project owner shall also document in each monthly compliance report (MCR) the actual volume of wastes generated and the waste management methods used during the year; provide a comparison of the actual waste generation and management methods used to those proposed in the original Construction Waste Management Plan; and update the Construction Waste Management Plan, as necessary, to address current waste generation and management practices.

WASTE-6 Upon becoming aware of any impending waste management-related enforcement action by any local, state, or federal authority, the project owner shall notify the CPM of any such action taken or proposed to be taken against the project itself, or against any waste hauler or disposal facility or treatment operator with which the owner contracts.

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

WASTE-7 The project owner shall prepare an Operation Waste Management Plan for all wastes generated during operation of the facility and shall submit the plan to the CPM for review and approval. The plan shall contain, at a minimum, the following:

- a detailed description of all operation and maintenance waste streams, including projections of amounts to be generated, frequency of generation, and waste hazard classifications;
- management methods to be used for each waste stream, including temporary on-site storage, housekeeping and best management practices to be employed, treatment methods and companies providing treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans;
- information and summary records of conversations with the local Certified Unified Program Agency and the Department of Toxic Substances Control regarding any waste management requirements necessary for project activities. Copies of all required waste management permits, notices, and/or authorizations shall be included in the plan and updated as necessary;
- a detailed description of how facility wastes will be managed and any contingency plans to be employed, in the event of an unplanned closure or planned temporary facility closure; and
- a detailed description of how facility wastes will be managed and disposed upon closure of the facility.

Verification: The project owner shall submit the Operation Waste Management Plan to the CPM for approval no less than 30 days prior to the start of project operation. The project owner shall submit any required revisions to the CPM within 20 days of notification from the CPM that revisions are necessary.

The project owner shall also document in each Annual Compliance Report the actual volume of wastes generated and the waste management methods used during the year; provide a comparison of the actual waste generation and management methods used to those proposed in the original Operation Waste Management Plan; and update the Operation Waste Management Plan as necessary to address current waste generation and management practices.

WASTE-8 The project owner shall ensure that all spills or releases of hazardous substances, materials, or waste are reported, cleaned up, and remediated as necessary, in accordance with all applicable federal, state, and local requirements.

Verification: The project owner shall document all unauthorized releases and spills of hazardous substances, materials, or wastes that occur on the project property or related pipeline and transmission corridors. The documentation shall include, at a minimum, the following information: location of release; date and time of release; reason for release; volume released; amount of contaminated soil/material generated; how release was managed and material cleaned up; if the release was reported; to whom the release was reported; release corrective action and cleanup requirements placed by regulating agencies; level of cleanup achieved and actions taken to prevent a similar release or spill; and disposition of any hazardous wastes and/or contaminated soils and materials that may have been generated by the release. Copies of the unauthorized spill documentation shall be provided to the CPM within 30 days of the date the release was discovered.

REFERENCES

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HBEP 2012c – Stoel Rives LLP / Melissa A. Foster (tn 66490). *Applicant's Data Adequacy Supplement, dated 08/06/2012.* Submitted to CEC/ Dockets on 08/06/2012.

HBEP 2012n – Stoel Rives LLP / Melissa A. Foster (tn 68366). *Applicant's Responses to Staff's Data Requests, Set 1A (#1-72), dated, 11/02/2012.* Submitted to Energy Commission/ Dockets on 11/02/2012.

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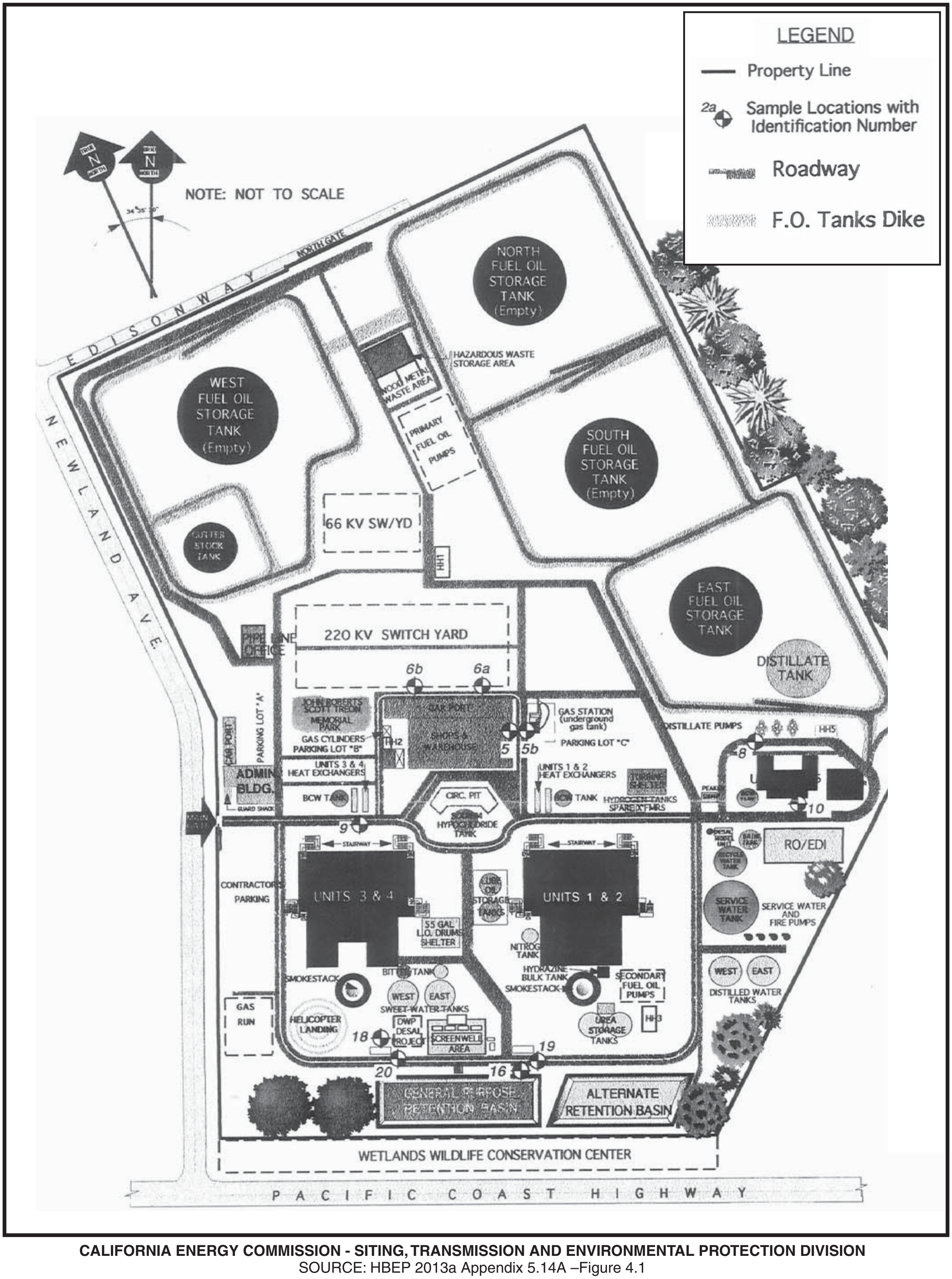
HBEP 2013t – Stoel Rives LLP / Melissa A. Foster (tn 69961). *Applicant's Revision to Construction and Demolition Schedule, dated 03/19/2013.* Submitted to Energy Commission/ Dockets on 03/19/2013

HBEP 2013u – Stoel Rives LLP / Kimberly J. Hellwig (tn 69967). *Applicant's Submittal of Additional Construction and Demolition Information, dated 03/20/2013.* Submitted to Energy Commission/ Dockets on 03/20/2013

Jamison and Associates 2012 – Jamison and Associates. First Draft Closure Plan Huntington Beach Generating Station Retention Basin Site, Orange County California. October 2012.

WASTE MANAGEMENT - FIGURE 1

Huntington Beach Energy Project- Additional Investigation Sample Location Map



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: HBEP 2013a Appendix 5.14A –Figure 4.1

WORKER SAFETY AND FIRE PROTECTION

Geoff Lesh, PE, CSP, CFPS

SUMMARY OF CONCLUSIONS

Staff concludes that if the applicant for the proposed Huntington Beach Energy Project (HBEP), provides a Project Construction Safety and Health Program and a Project Operations and Maintenance Safety and Health Program, as required by Conditions of Certification **WORKER SAFETY-1** and **-2** and fulfils the requirements of Conditions of Certification **WORKER SAFETY-3** through **-5**, the project would incorporate sufficient measures to ensure adequate levels of industrial safety and comply with applicable laws, ordinances, regulations, and standards. The proposed conditions of certification provide assurance that the Construction Safety and Health Program and the Operations and Maintenance Safety and Health Program proposed by the applicant would be reviewed by the appropriate agencies before implementation. The conditions also require verification that the proposed plans adequately assure worker safety and fire protection and comply with applicable laws, ordinances, regulations, and standards.

The Huntington Beach Fire Department has stated that its ability to respond to emergency calls will not be affected by the construction and operation of the HBEP. Therefore, staff agrees with the applicant that mitigation is not required.

INTRODUCTION

Worker safety and fire protection is regulated through laws, ordinances, regulations, and standards (LORS), at the federal, state, and local levels. Industrial workers at the facility operate equipment and handle hazardous materials daily and may face hazards that can result in accidents and serious injury. Protection measures are employed to eliminate or reduce these hazards or to minimize the risk through special training, protective equipment, and procedural controls.

The purpose of this Preliminary Staff Assessment (PSA) is to assess the worker safety and fire protection measures proposed by the HBEP and to determine whether the applicant has proposed adequate measures to:

- comply with applicable safety LORS;
- protect the workers during construction and operation of the facility;
- protect against fire; and
- provide adequate emergency response procedures.

LAWS, ORDINANCES, REGULATION, AND STANDARDS

Worker Safety and Fire Protection Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
Federal	
Title 29 U.S. Code (USC) section 651 et seq (Occupational Safety and Health Act of 1970)	This act mandates safety requirements in the workplace with the purpose of "[assuring] so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources" (29 USC § 651).
Title 29 Code of Federal Regulation (CFR) sections 1910.1 to 1910.1500 (Occupational Safety and Health Administration Safety and Health Regulations)	These sections define the procedures for promulgating regulations and conducting inspections to implement and enforce safety and health procedures to protect workers, particularly in the industrial sector.
29 CFR sections 1952.170 to 1952.175	These sections provide federal approval of California's plan for enforcement of its own Safety and Health requirements, in lieu of most of the federal requirements found in 29 CFR sections 1910.1 to 1910.1500.
State	
Title 8 California Code of Regulations (Cal Code Regs.) all applicable sections (Cal/OSHA regulations)	These sections require that all employers follow these regulations as they pertain to the work involved. This includes regulations pertaining to safety matters during construction, commissioning, and operations of power plants, as well as safety around electrical components, fire safety, and hazardous materials use, storage, and handling.
24 Cal Code Regs. section 3, et seq.	This section incorporates the current addition of the Uniform Building Code.
Health and Safety Code section 25500, et seq.	This section presents Risk Management Plan requirements for threshold quantity of listed acutely hazardous materials at a facility.
Health and Safety Code sections 25500 to 25541	These sections require a Hazardous Material Business Plan detailing emergency response plans for hazardous materials emergency at a facility.
Local (or locally enforced)	
California Fire Code 2010	The fire code contains general provisions for fire safety, including requirements for proper storage and handling of hazardous materials and listing of the information needed by emergency response personnel. Enforced by the Huntington Beach Fire Department.
City of Huntington Beach Municipal Code, Chapter 17.56	City of Huntington Beach Fire Code: The City of Huntington Beach has adopted the California Fire Code and has adopted several ordinances which amend it. I
City of Huntington Beach Municipal Code	Develop and implement safety management plans as required by CA H&SC Sections 25500-25520. Administered by the Huntington Beach

Applicable Law	Description
Section 17.58	Fire Department
City of Huntington Beach Fire Department City Specifications	Various Huntington Beach Fire Department City Specifications (numbered 401 through 434) may be found at: http://www.huntingtonbeachca.gov/government/departments/Fire/fire_prevention_code_enforcement/fire_dept_city_specifications.cfm
NFPA 56 (adopted 2012)	NFPA 56 is the Standard for Fire and Explosion Prevention During Cleaning and Purging of Flammable Gas Piping Systems.
National Fire Protection Association standards	These standards provide specifications and requirements for fire safety, including the design, installation, and maintenance of fire protection equipment. Enforced by the Huntington Beach Fire Department.

SETTING

The proposed facility would be located in the city of Huntington Beach within an industrial area that is currently served by the local fire department. Fire support services to the site would be under the jurisdiction of the city of Huntington Beach Fire Department (HBFD). There are a total of eight fire stations within the city of Huntington Beach. The closest station to the HBEP site would be Station #4 of the HBFD located at 21441 Magnolia Street, approximately 0.8 miles away. The total response time from the moment a call is made to the point of arrival at the site would be approximately 5 minutes .The next closest station would be Station #5, located at 530 Lake Street, about 2.0 miles away, which would respond within 6 to 7 minutes.

The first responders to a hazardous materials incident would be from Station #4 of the Huntington Beach Fire Department (HBFD). If needed, a full hazardous materials response would be provided by the HBFD Hazardous Materials Response Team (HBFD-HMRT) located at HBFD Station #6, located at 18591 Edwards Street, Huntington Beach, CA, approximate 4 miles away. The HBFD-HMRT is capable of handling any hazardous materials-related incident at the proposed facility and would have a response time of 15-to-20 minutes.

In addition to construction and operations worker safety issues, the potential exists for exposure to contaminated soil during site preparation. The Phase I Environmental Site Assessment conducted for this site in 2012 concluded that the areas beneath existing structures may have environmental conditions that would require remediation and that this should be assessed during the time these structures are removed (HBEP 2012a, §§ 5.14.1.1.2 and 5.14.1.2.1). To address the possibility that soil contamination would be encountered during construction of the HBEP, proposed Conditions of Certification **WASTE-3** and **WASTE-4** require a registered professional engineer or geologist to be available during soil excavation and grading to ensure proper handling and disposal of contaminated soil. See the staff assessment section on **Waste Management** for a more detailed analysis of this topic.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

Two issues are assessed in **Worker Safety-Fire Protection:**

1. The potential for impacts on the safety of workers during demolition, construction, and operations activities, and
2. Fire prevention/protection, emergency medical response, and hazardous materials spill response during demolition, construction, and operations.

Worker safety issues are thoroughly addressed by Cal/OSHA regulations. If all LORS are followed, workers will be adequately protected. Thus, the standard for staff's review and determination of significant impacts on workers is whether or not the applicant has demonstrated adequate knowledge about and dedication to implementing all pertinent and relevant Cal/OSHA standards.

Regarding fire prevention matters, staff reviews and evaluates the on-site fire-fighting systems proposed by the applicant and the time needed for off-site local fire departments to respond to a fire, medical, or hazardous material emergency at the proposed power plant site. If on-site systems do not follow established codes and industry standards, staff recommends additional measures. Staff reviews and evaluates the local fire department capabilities and response time in each area and interviews the local fire officials to determine if they feel adequately trained, manned, and equipped to respond to the needs of a power plant. Staff then determines if the presence of the power plant would cause a significant impact on a local fire department. If it does, staff will recommend that the applicant mitigate this impact by providing increased resources to the fire department.

Staff has also established a procedure when a local fire department has identified either a significant incremental project impact to the local agency or a significant incremental cumulative impact to a local agency. Staff first conducts an initial review of the position and either agrees or disagrees with the fire department's determination that a significant impact would exist if the proposed power plant is built and operated. A process then starts whereby the project applicant can either accept the determination made by staff or refute the determination by providing a Fire Needs Assessment and a Risk Assessment. The Fire Needs Assessment would address fire response and equipment/staffing/location needs while the Risk Assessment would be used to establish that while an impact to the fire department <u>may</u> indeed exist, whether the risk (chances) of that impact occurring and causing injury or death is less than significant.

DIRECT/INDIRECT IMPACTS AND MITIGATION

<u>Worker Safety</u>

Industrial environments are potentially dangerous during construction and operation of facilities. Workers at the proposed HBEP would be exposed to loud noises, moving equipment, trenches, and confined space entry and egress problems. The workers may experience falls, trips, burns, lacerations, and numerous other injuries. They have the potential to be exposed to falling equipment or structures, chemical spills, hazardous waste, fires, explosions, and electrical sparks and electrocution. It is important for the HBEP to have well-defined policies and procedures, training, and hazard recognition and control at its facility to minimize such hazards and protect workers. If the facility complies with all LORS, workers will be adequately protected from health and safety hazards.

A Safety and Health Program would be prepared by the applicant to minimize worker hazards during construction and operation. Staff uses the phrase “Safety and Health Program” to refer to the measures that would be taken to ensure compliance with the applicable LORS during the construction and operational phases of the project.

Construction Safety and Health Program

HBEP encompasses construction and operation of a natural gas-fired facility. Workers would be exposed to hazards typical of construction and operation of a gas-fired simple cycle facility.

Construction Safety Orders are published at Title 8 California Code of Regulations sections 1502, et seq. These requirements are promulgated by Cal/OSHA and would be applicable to the construction phase of the project. The Construction Safety and Health Program would include the following:

- Construction Injury and Illness Prevention Program (8 Cal Code Regs. § 1509)
- Construction Fire Prevention Plan (8 Cal Code Regs. § 1920)
- Personal Protective Equipment Program (8 Cal Code Regs. §§ 1514 — 1522)
- Emergency Action Program and Plan

Additional programs under General Industry Safety Orders (8 Cal Code Regs. §§ 3200 to 6184), Electrical Safety Orders (8 Cal Code Regs. §§2299 to 2974) and Unfired Pressure Vessel Safety Orders (8 Cal Code Regs. §§ 450 to 544) would include:

- Electrical Safety Program
- Motor Vehicle and Heavy Equipment Safety Program
- Forklift Operation Program
- Excavation/Trenching Program
- Fall Protection Program
- Scaffolding/Ladder Safety Program
- Articulating Boom Platforms Program
- Crane and Material Handling Program
- Housekeeping and Material Handling and Storage Program
- Respiratory Protection Program
- Employee Exposure Monitoring Program

- Hand and Portable Power Tool Safety Program
- Hearing Conservation Program
- Back Injury Prevention Program
- Hazard Communication Program
- Heat and Cold Stress Monitoring and Control Program
- Pressure Vessel and Pipeline Safety Program
- Hazardous Waste Program
- Hot Work Safety Program
- Permit-Required Confined Space Entry Program

The Application for Certification (AFC) includes adequate outlines of each of the above programs (HBEP 2012a, § 5.16.3.3.1). Prior to the start of construction of HBEP, detailed programs and plans would be provided to the California Energy Commission compliance project manager (CPM) and to the HBFD pursuant to the Condition of Certification **WORKER SAFETY-1**.

Operations and Maintenance Safety and Health Program

Prior to the start of operations at HBEP, the Operations and Maintenance Safety and Health Program would be prepared. This operational safety program would include the following programs and plans:

- Injury and Illness Prevention Program (8 Cal Code Regs. § 3203)
- Fire Protection and Prevention Program (8 Cal Code Regs. § 3221)
- Personal Protective Equipment Program (8 Cal Code Regs. §§ 3401 to 3411)
- Emergency Action Plan (8 Cal Code Regs. § 3220)

In addition, the requirements under General Industry Safety Orders (8 Cal Code Regs. §§ 3200 to 6184), Electrical Safety Orders (8 Cal Code Regs. §§2299 to 2974) and Unfired Pressure Vessel Safety Orders (8 Cal Code Regs. §§ 450 to 544) would be applicable to the project. Written safety programs for HBEP, which the applicant would develop, would ensure compliance with the above-mentioned requirements.

The AFC includes adequate outlines of the Injury and Illness Prevention Program, Emergency Action Plan, Fire Prevention Program, and Personal Protective Equipment Program (HBEP 2012a, § 5.16.3.3.2). Prior to operation of HBEP, all detailed programs and plans would be provided to the CPM and HBFD pursuant to Condition of Certification **WORKER SAFETY-2**.

Safety and Health Program Elements

As mentioned above, the applicant provided the proposed outlines for both a Construction Safety and Health Program and an Operations Safety and Health Program. The measures in these plans are derived from applicable sections of state and federal law. Both safety and health programs would comprise six more specific programs and would require major items detailed in the following paragraphs.

Injury and Illness Prevention Program

The IIPP would include the following components as presented in the AFC (HBEP 2012a, § 5.16.3.3.2):

- identity of person(s) with authority and responsibility for implementing the program;
- safety and health policy of the plan;
- definition of work rules and safe work practices for construction activities;
- system for ensuring that employees comply with safe and healthy work practices;
- system for facilitating employer-employee communications;
- procedures for identifying and evaluating workplace hazards and developing necessary program(s);
- methods for correcting unhealthy/unsafe conditions in a timely manner;
- safety procedures; and
- training and instruction.

Fire Prevention Plan

California Code of Regulations requires an Operations Fire Prevention Plan (8 Cal Code Regs. § 3221). The AFC outlines a proposed Fire Prevention Plan which is acceptable to staff (HBEP 2012a, § 5.16.3.3.2). The plan would accomplish the following:

- determine general program requirements;
- determine fire hazard inventory, including ignition sources and mitigation;
- develop good housekeeping practices and proper materials storage;
- establish employee alarm and/or communication system(s);
- provide portable fire extinguishers at appropriate site locations;
- locate fixed fire-fighting equipment in suitable areas;
- specify fire control requirements and procedures;
- establish proper flammable and combustible liquid storage facilities;
- identify the location and use of flammable and combustible liquids;
- provide proper dispensing and determine disposal requirements for flammable liquids;
- establish and determine training and instruction requirements and programs; and
- identify personnel to contact for information on plan contents.

Staff proposes that the applicant submit a final Fire Prevention Plan to the CPM for review and approval and to the HBFD for review and comment to satisfy proposed Conditions of Certification **WORKER SAFETY-1** and **WORKER SAFETY-2**.

Personal Protective Equipment Program

California regulations require Personal Protective Equipment (PPE) and first aid supplies whenever hazards are present that, due to process, environment, chemicals or mechanical irritants, can cause injury or impair bodily function as a result of absorption, inhalation, or physical contact (8 Cal Code Regs. §§ 3380 to 3400). The HBEP operational environment would require PPE.

All safety equipment must meet National Institute of Safety and Health (NIOSH) or American National Standards Institute (ANSI) standards and would carry markings, numbers, or certificates of approval. Respirators must meet NIOSH and Cal/OSHA standards. Each employee must be provided with the following information pertaining to the protective clothing and equipment:

- proper use, maintenance, and storage;
- when to use the protective clothing and equipment;
- benefits and limitations; and
- when and how to replace the protective clothing and equipment.

The PPE Program ensures that employers comply with the applicable requirements for PPE and provides employees with the information and training necessary to protect them from potential workplace hazards.

Emergency Action Plan

California regulations require an Emergency Action Plan (8 Cal Code Regs. § 3220). The AFC contains a satisfactory outline for an emergency action plan (HBEP 2012a, § 5.16.3.3.2).

The outline lists plans to accomplish the following:

- establish emergency escape procedures and emergency escape route for the facility;
- determine procedures to be followed by employees who remain to operate critical plant operations before they evacuate;
- provide procedures to account for all employees and visitors after emergency evacuation of the plant has been completed;
- specify rescue and medical duties for assigned employees;
- identify fire and emergency reporting procedures to regulatory agencies;
- develop alarm and communication system for the facility;
- establish a list of personnel to contact for information on the plan contents;
- provide emergency response procedures for ammonia release; and
- determine and establish training and instruction requirements and programs.

Written Safety Program

In addition to the specific plans listed above, additional LORS called *safe work practices* apply to the project. Both the Construction and the Operations Safety Programs would address safe work practices under a variety of programs. The components of these programs include, but are not limited to, the programs found under the heading “Construction Safety and Health Program” in this **Worker Safety and Fire Protection** section.

Safety Training Programs

Employees would be trained in the safe work practices described in the above-referenced safety programs.

Additional Mitigation Measures

Protecting construction workers from injury and disease is among the greatest challenges in occupational safety and health. The following facts are reported by the National Institute for Occupational Safety and Health (NIOSH):

- More than 7 million persons work in the construction industry, representing 6 percent of the labor force. Approximately 1.5 million of these workers are self-employed.
- Of approximately 600,000 construction companies, 90 percent employ fewer than 20 workers. Few have formal safety and health programs.
- From 1980 to 1993, an average of 1,079 construction workers were killed on the job each year—more fatal injuries than in any other industry.
- Falls caused 3,859 construction worker fatalities (25.6 percent) between 1980 and 1993.
- Construction injuries account for 15 percent of workers' compensation costs.
- Assuring safety and health in construction is complex, involving short-term work sites, changing hazards, and multiple operations and crews working in close proximity.
- In 1990, Congress directed NIOSH to undertake research and training to reduce diseases and injuries among construction workers in the United States. Under this mandate, NIOSH funds both intramural and extramural research projects.

The hazards associated with the construction industry are thus well documented. These hazards increase in complexity in the multi-employer worksites typical of large, complex, industrial-type projects such as the construction of gas-fired power plants. In order to reduce and/or eliminate these hazards, it has become standard industry practice to hire a Construction Safety Supervisor to ensure a safe and healthful environment for all personnel. That this standard practice has reduced and/or eliminated hazards has been evident in the audits staff recently conducted of power plants under construction. 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 in four areas:

- to improve their safety and health performance;
- to assist them in striving for the elimination of the four hazards (falls, electrical, caught in/between and struck-by hazards), which account for the majority of fatalities and injuries in this industry and have been the focus of targeted OSHA inspections;
- to prevent serious accidents in the construction industry through implementation of enhanced safety and health programs and increased employee training; and
- to recognize those subcontractors with exemplary safety and health programs.

To date, there are no OSHA or Cal/OSHA requirements that an employer hire or provide for a Construction Safety Officer. OSHA and Cal/OSHA regulations do, however, require that safety be provided by an employer and the term *Competent Person* is used in many OSHA and 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-3,** which would require the applicant/project owner to designate and provide for a power plant site Construction Safety Supervisor.

As discussed above, the hazards associated with the construction industry are well documented. These hazards increase in complexity in the multi-employer worksites typical of large, complex, industrial-type projects such as the construction of gas-fired power plants. Accidents, fires, and a worker death have occurred at Energy Commission-certified power plants in the recent past due to the failure to recognize and control safety hazards and the inability to adequately supervise compliance with occupational safety and health regulations. Safety problems have been documented by Energy Commission staff in safety audits conducted in 2005 at several power plants under construction. The findings of the audit staff include, but are not limited to, such safety oversights as:

- lack of posted confined space warning placards/signs;
- confusing and/or inadequate electrical and machinery lockout/tagout permitting and procedures;
- confusing and/or inappropriate procedures for handing over lockout/tagout and confined space permits from the construction team to commissioning team and then to operations;
- dangerous placement of hydraulic elevated platforms under each other;
- inappropriate placement of fire extinguishers near hotwork;
- dangerous placement of numerous power cords in standing water on the site, thus increasing the risk of electrocution;
- construction of an unsafe aqueous ammonia unloading pad;

- inappropriate and unsecure placement of above-ground natural gas pipelines inside the facility, but too close to the perimeter fence; and
- lack of adequate employee- or contractor-written training programs addressing proper procedures to follow in the event of finding suspicious packages or objects either on or off site.

In order to reduce and/or eliminate these hazards, it is necessary for the Energy Commission to have a professional Safety Monitor on site to track compliance with Cal/OSHA regulations and periodically audit safety compliance during construction, commissioning, and the hand-over to operational status. These requirements are outlined in Condition of Certification **WORKER SAFETY-4**. A Safety Monitor, hired by the project owner, yet reporting to the Chief Building Official (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 it 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.

Fire Hazards

During construction and operation of the proposed HBEP, there is the potential for both small fires and major structural fires. Electrical sparks, combustion of fuel oil, natural gas, hydraulic fluid, mineral oil, insulating fluid at the power plant switchyard or flammable liquids, explosions, and over-heated equipment, may cause small fires. Major structural fires in areas without automatic fire detection and suppression systems are unlikely to develop at power plants. Fires and explosions of natural gas or other flammable gasses or liquids are rare. Compliance with all LORS would be adequate to assure protection from all fire hazards.

Staff reviewed the information provided in the AFC and applicant’s response to staff’s data requests to determine if HBFD’s available fire protection services and equipment would adequately protect workers and to determine the project’s impact on fire protection services in the area. The project will rely on both on-site fire protection systems and local fire protection services. The on-site fire protection system provides the first line of defense for small fires. In the event of a major fire, fire support services, including trained firefighters and equipment for a sustained response, would be provided by the HBFD (HBEP 2012a section 2.1.13, and HBEP 2012n, Data Request #72).

Construction

During construction, portable fire extinguishers would be placed throughout the site at appropriate intervals and periodically maintained, and safety procedures and training would be implemented according to the guidelines of the Construction Fire Protection and Prevention Program (HBEP 2012a, § 2.3.2.4). In addition, the HBEP proposed site is within the area of the existing Huntington Beach Power Station, which has an existing hydrant system that could provide extra protection during construction.

Operation

The information in the AFC indicates that the project intends to meet the fire protection and suppression requirements of the 2010 California Fire Code, all applicable recommended NFPA standards (including Standard 850 addressing fire protection at electric generating plants), and all Cal/OSHA requirements. Fire suppression elements in the proposed plant would include both fixed and portable fire extinguishing systems. The fire protection water system would comprise the existing hydrant system and any needed extensions needed for new HBEP structures. Any new fire hydrants would be installed per NFPA requirements. The fire water would be potable city water supplied by the fire protection tank with water pressure maintained by a jockey pump, an electric pump, and a diesel-driven pump (HBEP 2012a, § 2.5.3.1).

Fixed water fire suppression systems would be installed in areas of risk including the, fire pumps, steam turbine areas, turbine lube-oil systems, and step-up transformers. A carbon dioxide or dry chemical fire protection system would be provided for the combustion turbine generators and accessory equipment compartments (HBEP 2012a, § 2.5.3.1).

The fire protection system would have fire detection sensors and monitoring equipment that would trigger alarms and automatically actuate the suppression systems. In addition to the fixed fire protection system, appropriate class of service portable extinguishers and fire hydrants/hose stations would be located throughout the facility at code-approved intervals (HBEP 2012a, § 2.3.1.1.2). These systems are standard requirements by the NFPA, and the California Fire Code, and staff has determined that they will ensure adequate fire protection.

The applicant would be required by Conditions of Certification **WORKER SAFETY-1** and**-2** to provide the final Fire Protection and Prevention Program to staff and to the HBFD prior to construction and operation of the project to confirm the adequacy of the proposed fire protection measures.

Emergency Medical Services Response

Staff conducted a statewide survey to determine the frequency of Emergency Medical Services (EMS) response and off-site fire-fighter response for natural gas-fired power plants in California. The purpose of the analysis was to determine what impact, if any, power plants may have on local emergency services. Staff has concluded that incidents at power plants that require fire or EMS response are infrequent and represent an insignificant impact on the local fire departments, except for rare instances where a rural fire department has mostly volunteer 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 those involving visitors. The need for prompt response within a few minutes is well documented in the medical literature. Staff believes that the quickest medical intervention can only be achieved with the use of an on-site automatic external defibrillator (AED); the response from an off-site provider would take longer regardless of the provider location. This fact is also well documented and serves as the basis for 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 in order to treat cardiac arrythmias resulting from industrial accidents or other non-work related causes.

Staff proposes Condition of Certification **WORKER SAFETY-5,** which would require that this portable AED be located on site, that all power plant employees on site during operations be trained in its use, and that a representative number of workers on site during construction and commissioning also be trained in its use.

CUMULATIVE IMPACTS AND MITIGATION

Staff reviewed the potential for the construction and operation of the HBEP combined with existing industrial facilities and expected new facilities to result in impacts on the fire and emergency service capabilities of the HBFD and found that there was no significant potential for cumulative impacts to occur.

Based upon staff's experience with power plants around the state, staff concludes that while it is possible that during a major earthquake (or other major event) response to the power plant could impact on the Huntington Beach Fire Department, the probability of that happening is less than significant. Therefore, this project would not have a significant incremental or cumulative impact on the department's ability to respond to a fire or other emergency and no mitigation is required.

The Huntington Beach Fire Department has stated that its ability to respond to emergency calls will not be affected by the construction and operation of the HBEP. Therefore, staff agrees with the applicant that mitigation is not required (HBEP 2012n).

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Comment: The city of Huntington Beach provided comments from the Huntington Beach Fire Department in the form of a Code Requirements letter regarding standard codes on fire safety and hazardous materials management, which identified specific city of Huntington Beach Municipal and Fire codes and specifications which would apply to the proposed project (CHB 2012a).

Response: Staff agrees and notes that the project would be built to comply with all local laws, ordinances, regulations, and standards (LORS). Notations to the local LORS have been added to the LORS table (**Worker Safety and Fire Protection Table 1**) in this staff assessment.

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Staff concludes that construction and operation of the HBEP would be in compliance with all applicable laws, ordinances, regulations, and standards (LORS) regarding long-term and short-term project impacts in the area of worker safety and fire protection.

CONCLUSIONS

Staff concludes that if the applicant for the proposed HBEP provides a Project Construction Safety and Health Program and a Project Operations and Maintenance Safety and Health Program as required by Conditions of Certification **WORKER SAFETY-1**, and **-2** and fulfils the requirements of Condition of Certification **WORKER SAFETY-3** through **-5**, the project would incorporate sufficient measures to ensure adequate levels of industrial safety and comply with applicable LORS. Staff also concludes that the operation of this power plant would not present a significant cumulative impact on the local fire department and therefore mitigation is not required.

PROPOSED CONDITIONS OF CERTIFICATION

WORKER SAFETY-1 The project owner shall submit to the compliance project manager (CPM) a copy of the Project Construction Safety and Health Program containing the following:

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

The Personal Protective Equipment Program, the Exposure Monitoring Program, and the Injury and Illness Prevention Program shall be submitted to the CPM for review and approval concerning compliance of the program with all applicable safety orders. The Construction Emergency Action Plan and the Fire Prevention Plan shall be submitted to the Huntington Beach Fire Department for review and comment prior to submittal to the CPM for approval.

<u>**Verification:**</u> At least 30 days prior to the start of construction, the project owner shall submit to the CPM for review and approval a copy of the Project Construction Safety and Health Program. The project owner shall provide a copy of a letter to the CPM from the Huntington Beach Fire Department stating the fire department's comments on the Construction Fire Prevention Plan and Emergency Action Plan.

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

- an Operation Injury and Illness Prevention Plan;
- an Emergency Action Plan;
- Hazardous Materials Management Program;
- Fire Prevention Plan (8 Cal Code Regs. § 3221); and

- Personal Protective Equipment Program (8 Cal Code Regs, §§ 3401—3411).

The Operation Injury and Illness Prevention Plan, Emergency Action Plan, and Personal Protective Equipment Program shall be submitted to the CPM for review and approval concerning compliance of the programs with all applicable safety orders. The Fire Prevention Plan and the Emergency Action Plan shall also be submitted to the Huntington Beach Fire Department for review and comment.

Verification: At least 30 days prior to the start of first-fire or commissioning, the project owner shall submit to the CPM for approval a copy of the Project Operations and Maintenance Safety and Health Program. The project owner shall provide a copy of a letter to the CPM from the Huntington Beach Fire Department stating the fire department's comments on the Operations Fire Prevention Plan and Emergency Action Plan.

WORKER SAFETY-3 The project owner shall provide a site Construction Safety Supervisor (CSS) who, by way of training and/or experience, is knowledgeable of power plant construction activities and relevant laws, ordinances, regulations, and standards; is capable of identifying workplace hazards relating to the construction activities; and has authority to take appropriate action to assure compliance and mitigate hazards. The CSS shall:

- have overall 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 and 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 and emergency response reports for injuries and inform the CPM of safety-related incidents; and
- assure that all the plans identified in Conditions of Certification Worker Safety-1 and -2 are implemented.

Verification: At least 60 days prior to the start of site mobilization, the project owner shall submit to the CPM the name and contact information for the Construction Safety Supervisor (CSS). The contact information of any replacement CSS shall be submitted to the CPM within one business day.

The CSS shall submit in the Monthly Compliance Report a monthly safety inspection report to include:

- record of all employees trained for that month (all records shall be kept on site for the duration of the project);
- summary report of safety management actions and safety-related incidents that occurred during the month;

- report of any continuing or unresolved situations and incidents that may pose danger to life or health; and
- report of accidents and injuries that occurred during the month.

WORKER SAFETY-4 The project owner shall make payments to the Chief Building Official (CBO) for the services of a Safety Monitor based upon a reasonable fee schedule to be negotiated between the project owner and the CBO. Those services shall be in addition to other work performed by the CBO. The Safety Monitor shall be selected by and report directly to the CBO and will be responsible for verifying that the Construction Safety Supervisor, as required in Condition of Certification Worker Safety-3, implements all appropriate Cal/OSHA and Energy Commission safety requirements. The Safety Monitor shall conduct on-site (including linear facilities) safety inspections at intervals necessary to fulfill those responsibilities.

Verification: At least 60 days prior to the start of construction, the project owner shall provide proof of its agreement to fund the Safety Monitor services to the CPM for review and approval.

WORKER SAFETY-5 The project owner shall ensure that a portable automatic external defibrillator (AED) is located on site during construction and operations and shall implement a program to ensure that workers are properly trained in its use and that the equipment is properly maintained and functioning at all times. During construction and commissioning, the following persons shall be trained in 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 60 days prior to the start of site mobilization, the project owner shall submit to the CPM proof that a portable automatic external defibrillator (AED) exists on site and a copy of the training and maintenance program for review and approval.

REFERENCES

California Fire Code 2010. Published by the International Code Council (ICC). Whittier, CA.

CHB 2012a – City of Huntington Beach / Dept of Planning & Building / Aaron Klemm / Jane James (tn 68804). City of Huntington Beach Comments on the Huntington Beach Energy Project, dated 12/06/2012. Submitted to CEC/ Dockets on 12/07/2012.

HBEP 2012a – AES Southland Development, LLC / Stephen O'Kane (tn 66003). A*pplication for Certification (AFC), Volume I & II, dated, June 27, 2012*. Submitted to CEC/ Dockets on 06/27/2012.

HBEP 2012n – Stoel Rives LLP / Melissa A. Foster (tn 68366). *Applicant's Responses to Staff's Data Requests, Set 1A (#1-72), dated, 11/02/2012.* Submitted to CEC/ Dockets on 11/02/2012.

Engineering Assessment

FACILITY DESIGN

Shahab Khoshmashrab

SUMMARY OF CONCLUSIONS

The California Energy Commission staff concludes that the design, construction, and eventual closure of the project and its linear facilities would likely comply with applicable engineering laws, ordinances, regulations and standards. The proposed conditions of certification, below, would ensure compliance with these laws, ordinances, regulations and standards.

INTRODUCTION

Facility design encompasses the civil, structural, mechanical, and electrical engineering design of the Huntington Beach Energy Project (HBEP). The purpose of this analysis is to:

- Verify that the laws, ordinances, regulations and standards (LORS) that apply to the engineering design and construction of the project have been identified;
- Verify that both the project and its ancillary facilities are sufficiently described, including proposed design criteria and analysis methods, in order to provide reasonable assurance that the project will be designed and constructed in accordance with all applicable engineering LORS, in a manner that also ensures the public health and safety;
- Determine whether special design features should be considered during final design to address conditions unique to the site which could influence public health and safety; and
- Describe the design review and construction inspection process and establish the conditions of certification used to monitor and ensure compliance with the engineering LORS, in addition to any special design requirements.

Subjects discussed in this analysis include:

- Identification of the engineering LORS that apply to facility design;
- Evaluation of the applicant’s proposed design criteria, including identification of criteria essential to public health and safety;
- Proposed modifications and additions to the application for certification (AFC) necessary for compliance with applicable engineering LORS; and
- Conditions of certification proposed by staff to ensure that the project will be designed and constructed to ensure public health and safety and comply with all applicable engineering LORS.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Lists of LORS applicable to each engineering discipline (civil, structural, mechanical, and electrical) are described in the AFC (HBEP 2012a, AFC Appendix 2C). Key LORS are listed in **Facility Design Table 1,** below:

Facility Design Table 1
Key Engineering Laws, Ordinances, Regulations and Standards (LORS)

Applicable LORS	Description
Federal	Title 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health standards
State	2010 (or the latest edition in effect) California Building Standards Code (CBSC) (also known as Title 24, California Code of Regulations)
Local	City of Huntington Beach regulations and ordinances
General	American National Standards Institute (ANSI) American Society of Mechanical Engineers (ASME) American Welding Society (AWS) American Society for Testing and Materials (ASTM)

The following conditions of certification require the project to comply with the California Building Standards Code and city of Huntington Beach regulations and ordinances to ensure that the project would be built to applicable engineering codes and ensure public health and safety.

For the project to be built in a manner that would ensure public health and safety and operational integrity of project equipment, the LORS listed above in **Facility Design Table 1** under the "**General**" heading, must also be met by the project. The LORS listed under this heading are only some of the key engineering standards applicable to the project; for a comprehensive list of engineering LORS, please see AFC Appendix 2C.

SETTING

HBEP would be built on the existing site of the AES Huntington Beach Generating Station, an existing and operating power plant in Huntington Beach. For more information on the site and its related project description, please see the **Project Description** section of this document. Additional engineering design details are contained in the AFC, Appendix 2C (HBEP 2012a).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

The purpose of this analysis is to ensure that the project would be built to applicable engineering codes and ensure public health and safety. This analysis further verifies that applicable engineering LORS have been identified and that the project and its ancillary facilities have been described in adequate detail. It also evaluates the applicant's proposed design criteria, describes the design review and construction inspection process, and establishes conditions of certification that would monitor and ensure compliance with engineering LORS and any other special design requirements. These conditions allow both the California Energy Commission (Energy Commission) compliance project manager (CPM) and the applicant to adopt a compliance monitoring program that will verify compliance with these LORS.

SITE PREPARATION AND DEVELOPMENT

Staff has evaluated the proposed design criteria for grading, flood protection, erosion control, site drainage, and site access, in addition to the criteria for designing and constructing linear support facilities such as natural gas and electric transmission interconnections. The applicant proposes the use of accepted industry standards (see HBEP 2012a, Appendix 2C, for a representative list of applicable industry standards), design practices, and construction methods in preparing and developing the site. Staff concludes that this project, including its linear facilities, would most likely comply with all applicable site preparation LORS. To ensure compliance, staff proposes the conditions of certification listed below and in the **Geology and Paleontology** section of this document.

MAJOR STRUCTURES, SYSTEMS, AND EQUIPMENT

Major structures, systems, and equipment are structures and their associated components or equipment that are necessary for power production, costly or time consuming to repair or replace, are used for the storage, containment, or handling of hazardous or toxic materials, or could become potential health and safety hazards if not constructed according to applicable engineering LORS.

HBEP will be designed and constructed to the 2010 California Building Standards Code (CBSC), also known as Title 24, California Code of Regulations, which encompasses the California Building Code (CBC), California Building Standards Administrative Code, California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Fire Code, California Code for Building Conservation, California Reference Standards Code, and other applicable codes and standards in effect when the design and construction of the project actually begin. If the initial designs are submitted to the chief building official (CBO) for review and approval after the update to the 2010 CBSC takes effect, the 2010 CBSC provisions shall be replaced with the updated provisions.

Certain structures in a power plant may be required, under the CBC, to undergo dynamic lateral force (structural) analysis; others may be designed using the simpler static analysis procedure. In order to ensure that structures are analyzed according to their appropriate lateral force procedure, staff has included condition of certification **STRUC-1**, below, which, in part, requires the project CBO's review and approval of the owner's proposed lateral force procedures before construction begins.

PROJECT QUALITY PROCEDURES

The applicant describes a quality program intended to inspire confidence that its systems and components will be designed, fabricated, stored, transported, installed, and tested in accordance with all appropriate power plant technical codes and standards (HBEP 2012a, AFC § 3.12.6, Appendix 2C). Compliance with design requirements will be verified through specific inspections and audits. Implementation of this quality assurance/quality control (QA/QC) program will ensure that HBEP is actually designed, procured, fabricated, and installed as described in this analysis.

COMPLIANCE MONITORING

Under Section 104.1 of the 2010 CBC, the CBO is authorized and directed to enforce all provisions of the CBC. The Energy Commission itself serves as the building official, and has the responsibility to enforce the code, for all of the energy facilities it certifies. In addition, the Energy Commission has the power to interpret the CBC and adopt and enforce both rules and supplemental regulations that clarify application of the CBC's provisions.

The Energy Commission's design review and construction inspection process conforms to CBC requirements and ensures that all facility design conditions of certification are met. As provided by Section 103.3 of the 2010 CBC, the Energy Commission appoints experts to perform design review and construction inspections and act as delegate CBOs on behalf of the Energy Commission. These delegates may include the local building official and/or independent consultants hired to provide technical expertise that is not provided by the local official alone. The applicant, through permit fees provided by the CBC, pays the cost of these reviews and inspections. While building permits in addition to Energy Commission certification are not required for this project, the applicant pays in lieu of CBC permit fees to cover the costs of these reviews and inspections.

Engineering and compliance staff will invite a third-party engineering consultant to act as CBO for this project. When an entity has been assigned CBO duties, Energy Commission staff will complete a memorandum of understanding (MOU) with that entity to outline both its roles and responsibilities and those of its subcontractors and delegates.

Staff has developed proposed conditions of certification to ensure for protection of public health and safety and compliance with engineering design LORS. Some of these conditions address the roles, responsibilities, and qualifications of the engineers who will design and build the proposed project (conditions of certification **GEN-1** through **GEN-8**). These engineers must be registered in California and sign and stamp every submittal of design plans, calculations, and specifications submitted to the CBO. These conditions require that every element of the project's construction (subject to CBO review and approval) be approved by the CBO before it is performed. They also require that qualified special inspectors perform or oversee special inspections required by all applicable LORS.

While the Energy Commission and delegate CBO have the authority to allow some flexibility in scheduling construction activities, these conditions are written so that no element of construction (of permanent facilities subject to CBO review and approval) which could be difficult to reverse or correct can proceed without prior CBO approval. Elements of construction that are not difficult to reverse may proceed without approval of the plans. The applicant bears the responsibility to fully modify construction elements in order to comply with all design changes resulting from the CBO's subsequent plan review and approval process.

FACILITY CLOSURE

The removal of a facility from service (decommissioning) when it reaches the end of its useful life ranges from "mothballing," to the removal of all equipment and appurtenant facilities and subsequent restoration of the site. Future conditions that could affect decommissioning are largely unknown at this time.

In order to ensure that decommissioning will be completed in a manner that is environmentally sound, safe, and protects the public health and safety, the applicant shall submit a decommissioning plan to the Energy Commission for review and approval before the project's decommissioning begins. The plan shall include a discussion of:

- Proposed decommissioning activities for the project and all appurtenant facilities that were constructed as part of the project;
- All applicable LORS, local/regional plans, and proof of adherence to those applicable LORS and local/regional plans;
- The activities necessary to restore the site if the plan requires removal of all equipment and appurtenant facilities; and
- Decommissioning alternatives other than complete site restoration.

Satisfying the above requirements should serve as adequate protection, even in the unlikely event that the project is abandoned. Staff has proposed general conditions (see **General Conditions**) to ensure that these measures are included in the Facility Closure Plan.

CONCLUSIONS AND RECOMMENDATIONS

1. The laws, ordinances, regulations and standards (LORS) identified in the AFC and supporting documents directly apply to the project.

2. Staff has evaluated the proposed engineering LORS, design criteria, and design methods in the record, and concludes that the design, construction, and eventual closure of the project will likely comply with applicable engineering LORS.

3. The proposed conditions of certification will ensure that HBEP is designed and constructed in accordance with applicable engineering LORS. This will be accomplished through design review, plan checking, and field inspections that will be performed by the CBO or other Energy Commission delegate. Staff will audit the CBO to ensure satisfactory performance.

4. Though future conditions that could affect decommissioning are largely unknown at this time, it can reasonably be concluded that if the project owner submits a decommissioning plan as required in the **Compliance Conditions** portion of this document prior to decommissioning, decommissioning procedures will comply with all applicable engineering LORS.

Energy Commission staff recommends that:

1. The proposed conditions of certification be adopted to ensure that the project is designed and constructed in a manner that protects the public health and safety and complies with all applicable engineering LORS;

2. The project be designed and built to the 2010 CBSC (or successor standards, if in effect when initial project engineering designs are submitted for review); and

3. The CBO reviews the final designs, checks plans, and performs field inspections during construction. Energy Commission staff shall audit and monitor the CBO to ensure satisfactory performance.

CONDITIONS OF CERTIFICATION

GEN-1 The project owner shall design, construct, and inspect the project in accordance with the 2010 California Building Standards Code (CBSC), also known as Title 24, California Code of Regulations, which encompasses the California Building Code (CBC), California Building Standards Administrative Code, California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Fire Code, California Code for Building Conservation, California Reference Standards Code, and all other applicable engineering LORS in effect at the time initial design plans are submitted to the CBO for review and approval (the CBSC in effect is the edition that has been adopted by the California Building Standards Commission and published at least 180 days previously). The project owner shall ensure that all the provisions of the above applicable codes are enforced during the construction, addition, alteration, moving, demolition, repair, or maintenance of the completed facility. All transmission facilities (lines, switchyards, switching stations and substations) are covered in the conditions of certification in the **Transmission System Engineering** section of this document.

In the event that the initial engineering designs are submitted to the CBO when the successor to the 2010 CBSC is in effect, the 2010 CBSC provisions shall be replaced with the applicable successor provisions. Where, in any specific case, different sections of the code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern.

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

<u>Verification:</u> Within 30 days following receipt of the certificate of occupancy, the project owner shall submit to the 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.

Once the certificate of occupancy has been issued, the project owner shall inform the CPM at least 30 days prior to any construction, addition, alteration, moving, demolition, repair, or maintenance to be performed on any portion(s) of the completed facility that requires CBO approval for compliance with the above codes. The CPM will then determine if the CBO needs to approve the work.

GEN-2 Before submitting the initial engineering designs for CBO review, the project owner shall furnish the CPM and the CBO with a schedule of facility design submittals, and master drawings and master specifications list. The master drawings and master specifications list shall contain a list of proposed submittal packages of designs, calculations, and specifications for major structures, systems, and equipment. Major structures, systems, and equipment are structures and their associated components or equipment that are necessary for power production, costly or time consuming to repair or replace, are used for the storage, containment, or handling of hazardous or toxic materials, or could become potential health and safety hazards if not constructed according to applicable engineering LORS. The schedule shall contain the date of each submittal to the CBO. To facilitate audits by Energy Commission staff, the project owner shall provide specific packages to the CPM upon request.

Verification: At least 60 days (or a project owner- and CBO-approved alternative time frame) prior to the start of rough grading, the project owner shall submit to the CBO and to the CPM the schedule, and the master drawings and 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, systems, and equipment defined above in Condition of Certification **GEN-2**. Major structures and equipment shall be added to or deleted from the list only with CPM approval. The project owner shall provide schedule updates in the monthly compliance report.

GEN-3 The project owner shall make payments to the CBO for design review, plan checks, and construction inspections, based upon a reasonable fee schedule to be negotiated between the project owner and the CBO. These fees may be consistent with the fees listed in the 2010 CBC, adjusted for inflation and other appropriate adjustments; may be based on the value of the facilities reviewed; may be based on hourly rates; or may be otherwise agreed upon by the project owner and the CBO.

Verification: The project owner shall make the required payments to the CBO in accordance with the agreement between the project owner and the CBO. The project owner shall send a copy of the CBO's receipt of payment to the CPM in the next monthly compliance report indicating that applicable fees have been paid.

GEN-4 Prior to the start of rough grading, the project owner shall assign a California-registered architect, or a structural or civil engineer, as the resident engineer (RE) in charge of the project. All transmission facilities (lines, switchyards, switching stations, and substations) are addressed in the conditions of certification in the **Transmission System Engineering** section of this document.

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

The RE shall:

1. Monitor progress of construction work requiring CBO design review and inspection to ensure compliance with LORS;
2. Ensure that construction of all facilities subject to CBO design review and inspection conforms in every material respect to applicable LORS, these conditions of certification, approved plans, and specifications;
3. Prepare documents to initiate changes in approved drawings and specifications when either directed by the project owner or as required by the conditions of the project;
4. Be responsible for providing project inspectors and testing agencies with complete and up-to-date sets of stamped drawings, plans, specifications, and any other required documents;
5. Be responsible for the timely submittal of construction progress reports to the CBO from the project inspectors, the contractor, and other engineers who have been delegated responsibility for portions of the project; and
6. Be responsible for notifying the CBO of corrective action or the disposition of items noted on laboratory reports or other tests when they do not conform to approved plans and specifications.

The resident engineer (or his delegate) must be located at the project site, or be available at the project site within a reasonable period of time, during any hours in which construction takes place.

The RE shall have the authority to halt construction and to require changes or remedial work if the work does not meet requirements.

If the RE or the delegated engineers are reassigned or replaced, the project owner shall submit the name, qualifications and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO’s approval of the new engineer.

Verification: At least 30 days (or project owner- and CBO-approved alternative time frame) prior to the start of rough grading, the project owner shall submit to the CBO for review and approval, the resume and registration number of the RE and any other delegated engineers assigned to the project. The project owner shall notify the CPM of the CBO's approvals of the RE and other delegated engineer(s) within five days of the approval.

If the RE or the delegated engineer(s) is subsequently reassigned or replaced, the project owner has five days to submit the resume and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

GEN-5 Prior to the start of rough grading, the project owner shall assign at least one of each of the following California registered engineers to the project: a civil engineer; a soils, geotechnical, or civil engineer experienced and knowledgeable in the practice of soils engineering; and an engineering geologist. Prior to the start of construction, the project owner shall assign at least one of each of the following California registered engineers to the project: a design engineer who is either a structural engineer or a civil engineer fully competent and proficient in the design of power plant structures and equipment supports; a mechanical engineer; and an electrical engineer. (California Business and Professions Code section 6704 et seq., and sections 6730, 6731 and 6736 require state registration to practice as a civil engineer or structural engineer in California). All transmission facilities (lines, switchyards, switching stations, and substations) are handled in the conditions of certification in the **Transmission System Engineering** section of this document.

The tasks performed by the civil, mechanical, electrical, or design engineers may be divided between two or more engineers, as long as each engineer is responsible for a particular segment of the project (for example, proposed earthwork, civil structures, power plant structures, equipment support). No segment of the project shall have more than one responsible engineer. The transmission line may be the responsibility of a separate California registered electrical engineer.

The project owner shall submit, to the CBO for review and approval, the names, qualifications, and registration numbers of all responsible engineers assigned to the project.

If any one of the designated responsible engineers is subsequently reassigned or replaced, the project owner shall submit the name, qualifications and registration number of the newly assigned responsible engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer.

A. The civil engineer shall:

1. Review the foundation investigations, geotechnical, or soils reports prepared by the soils engineer, the geotechnical engineer, or by a civil engineer experienced and knowledgeable in the practice of soils engineering;

2. Design (or be responsible for the design of), stamp, and sign all plans, calculations, and specifications for proposed site work, civil works, and related facilities requiring design review and inspection by the CBO. At a minimum, these include: grading, site preparation, excavation, compaction, construction of secondary containment, foundations, erosion and sedimentation control structures, drainage facilities, underground utilities, culverts, site access roads and sanitary sewer systems; and
3. Provide consultation to the RE during the construction phase of the project and recommend changes in the design of the civil works facilities and changes to the construction procedures.

B. The soils engineer, geotechnical engineer, or civil engineer experienced and knowledgeable in the practice of soils engineering, shall:

1. Review all the engineering geology reports;
2. Prepare the foundation investigations, geotechnical, or soils reports containing field exploration reports, laboratory tests, and engineering analysis detailing the nature and extent of the soils that could be susceptible to liquefaction, rapid settlement or collapse when saturated under load;
3. Be present, as required, during site grading and earthwork to provide consultation and monitor compliance with requirements set forth in the 2010 CBC (depending on the site conditions, this may be the responsibility of either the soils engineer, the engineering geologist, or both); and
4. Recommend field changes to the civil engineer and RE.

This engineer shall be authorized to halt earthwork and to require changes if site conditions are unsafe or do not conform to the predicted conditions used as the basis for design of earthwork or foundations.

C. The engineering geologist shall:

1. Review all the engineering geology reports and prepare a final soils grading report; and
2. Be present, as required, during site grading and earthwork to provide consultation and monitor compliance with the requirements set forth in the 2010 CBC (depending on the site conditions, this may be the responsibility of either the soils engineer, the engineering geologist, or both).

D. The design engineer shall:

1. Be directly responsible for the design of the proposed structures and equipment supports;
2. Provide consultation to the RE during design and construction of the project;

3. Monitor construction progress to ensure compliance with engineering LORS;
4. Evaluate and recommend necessary changes in design; and
5. Prepare and sign all major building plans, specifications, and calculations.

E. The mechanical engineer shall be responsible for, and sign and stamp a statement with, each mechanical submittal to the CBO, stating that the proposed final design plans, specifications, and calculations conform to all of the mechanical engineering design requirements set forth in the Energy Commission's decision.

F. The electrical engineer shall:

1. Be responsible for the electrical design of the project; and
2. Sign and stamp electrical design drawings, plans, specifications, and calculations.

Verification: At least 30 days (or project owner- and CBO-approved alternative time frame) prior to the start of rough grading, the project owner shall submit to the CBO for review and approval, resumes and registration numbers of the responsible civil engineer, soils (geotechnical) engineer and engineering geologist assigned to the project.

At least 30 days (or project owner- and CBO-approved alternative time frame) prior to the start of construction, the project owner shall submit to the CBO for review and approval, resumes and registration numbers of the responsible design engineer, mechanical engineer, and electrical engineer assigned to the project.

The project owner shall notify the CPM of the CBO's approvals of the responsible engineers within five days of the approval.

If the designated responsible engineer is subsequently reassigned or replaced, the project owner has five days in which to submit the resume and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

GEN-6 Prior to the start of an activity requiring special inspection, including prefabricated assemblies, the project owner shall assign to the project, qualified and certified special inspector(s) who shall be responsible for the special inspections required by the 2010 CBC. All transmission facilities (lines, switchyards, switching stations, and substations) are handled in conditions of certification in the **Transmission System Engineering** section of this document.

A certified weld inspector, certified by the American Welding Society (AWS), and/or American Society of Mechanical Engineers (ASME) as applicable, shall inspect welding performed on-site requiring special inspection (including structural, piping, tanks and pressure vessels).

The special inspector shall:

1. Be a qualified person who shall demonstrate competence, to the satisfaction of the CBO, for inspection of the particular type of construction requiring special or continuous inspection;
2. Inspect the work assigned for conformance with the approved design drawings and specifications;
3. Furnish inspection reports to the CBO and RE. All discrepancies shall be brought to the immediate attention of the RE for correction, then, if uncorrected, to the CBO and the CPM for corrective action; and
4. Submit a final signed report to the RE, CBO, and CPM, stating whether the work requiring special inspection was, to the best of the inspector's knowledge, in conformance with the approved plans, specifications, and other provisions of the applicable edition of the CBC.

Verification: At least 15 days (or project owner- and CBO-approved alternative time frame) prior to the start of an activity requiring special inspection, the project owner shall submit to the CBO for review and approval, with a copy to the CPM, the name(s) and qualifications of the certified weld inspector(s), or other certified special inspector(s) assigned to the project to perform one or more of the duties set forth above. The project owner shall also submit to the CPM a copy of the CBO's approval of the qualifications of all special inspectors in the next monthly compliance report.

If the special inspector is subsequently reassigned or replaced, the project owner has five days in which to submit the name and qualifications of the newly assigned special inspector to the CBO for approval. The project owner shall notify the CPM of the CBO's approval of the newly assigned inspector within five days of the approval.

GEN-7 If any discrepancy in design and/or construction is discovered in any engineering work that has undergone CBO design review and approval, the project owner shall document the discrepancy and recommend required corrective actions. The discrepancy documentation shall be submitted to the CBO for review and approval. The discrepancy documentation shall reference this condition of certification and, if appropriate, applicable sections of the CBC and/or other LORS.

Verification: The project owner shall transmit a copy of the CBO's approval of any corrective action taken to resolve a discrepancy to the CPM in the next monthly compliance report. If any corrective action is disapproved, the project owner shall advise the CPM, within five days, of the reason for disapproval and the revised corrective action to obtain CBO's approval.

GEN-8 The project owner shall obtain the CBO's final approval of all completed work that has undergone CBO design review and approval. The project owner shall request the CBO to inspect the completed structure and review the submitted documents. The project owner shall notify the CPM after obtaining the CBO's final approval. The project owner shall retain one set of approved engineering plans, specifications, and calculations (including all approved changes) at the project site or at another accessible location during the operating life of the project. Electronic copies of the approved plans, specifications, calculations, and marked-up as-builts shall be provided to the CBO for retention by the CPM.

Verification: Within 15 days of the completion of any work, the project owner shall submit to the CBO, with a copy to the CPM, in the next monthly compliance report, (a) a written notice that the completed work is ready for final inspection, and (b) a signed statement that the work conforms to the final approved plans. After storing the final approved engineering plans, specifications, and calculations described above, the project owner shall submit to the CPM a letter stating both that the above documents have been stored and the storage location of those documents.

Within 90 days of the completion of construction, the project owner shall provide to the CBO three sets of electronic copies of the above documents at the project owner's expense. These are to be provided in the form of "read only" (Adobe .pdf 6.0 or newer version) files, with restricted (password-protected) printing privileges, on archive quality compact discs.

CIVIL-1 The project owner shall submit to the CBO for review and approval the following:

1. Design of the proposed drainage structures and the grading plan;
2. An erosion and sedimentation control plan;
3. A construction storm water pollution prevention plan (SWPPP);
4. Related calculations and specifications, signed and stamped by the responsible civil engineer; and
5. Soils, geotechnical, or foundation investigations reports required by the 2010 CBC.

Verification: At least 15 days (or project owner- and CBO-approved alternative time frame) prior to the start of site grading the project owner shall submit the documents described above to the CBO for design review and approval. In the next monthly compliance report following the CBO's approval, the project owner shall submit a written statement certifying that the documents have been approved by the CBO.

CIVIL-2 The resident engineer shall, if appropriate, stop all earthwork and construction in the affected areas when the responsible soils engineer, geotechnical engineer, or the civil engineer experienced and knowledgeable in the practice of soils engineering identifies unforeseen adverse soil or geologic conditions. The project owner shall submit modified plans, specifications, and calculations to the CBO based on these new conditions. The project owner shall obtain approval from the CBO before resuming earthwork and construction in the affected area.

Verification: The project owner shall notify the CPM within 24 hours, when earthwork and construction is stopped as a result of unforeseen adverse geologic/soil conditions. Within 24 hours of the CBO's approval to resume earthwork and construction in the affected areas, the project owner shall provide to the CPM a copy of the CBO's approval.

CIVIL-3 The project owner shall perform inspections in accordance with the 2010 CBC. All plant site-grading operations, for which a grading permit is required, shall be subject to inspection by the CBO.

If, in the course of inspection, it is discovered that the work is not being performed in accordance with the approved plans, the discrepancies shall be reported immediately to the resident engineer, the CBO, and the CPM. The project owner shall prepare a written report, with copies to the CBO and the CPM, detailing all discrepancies, non-compliance items, and the proposed corrective action.

Verification: Within five days of the discovery of any discrepancies, the resident engineer shall transmit to the CBO and the CPM a non-conformance report (NCR), and the proposed corrective action for review and approval. Within five days of resolution of the NCR, the project owner shall submit the details of the corrective action to the CBO and the CPM. A list of NCRs, for the reporting month, shall also be included in the following monthly compliance report.

CIVIL-4 After completion of finished grading and erosion and sedimentation control and drainage work, the project owner shall obtain the CBO's approval of the final grading plans (including final changes) for the erosion and sedimentation control work. The civil engineer shall state that the work within his/her area of responsibility was done in accordance with the final approved plans.

Verification: Within 30 days (or project owner- and CBO-approved alternative time frame) of the completion of the erosion and sediment control mitigation and drainage work, the project owner shall submit to the CBO, for review and approval, the final grading plans (including final changes) and the responsible civil engineer's signed statement that the installation of the facilities and all erosion control measures were completed in accordance with the final approved combined grading plans, and that the facilities are adequate for their intended purposes. The project owner shall submit a copy of the CBO's approval to the CPM in the next monthly compliance report.

STRUC-1 Prior to the start of any increment of construction, the project owner shall submit plans, calculations and other supporting documentation to the CBO for design review and acceptance for all project structures and equipment identified in the CBO-approved master drawing and master specifications lists. The design plans and calculations shall include the lateral force procedures and details as well as vertical calculations.

Construction of any structure or component shall not begin until the CBO has approved the lateral force procedures to be employed in designing that

structure or component. The project owner shall:

1. Obtain approval from the CBO of lateral force procedures proposed for project structures;
2. Obtain approval from the CBO for the final design plans, specifications, calculations, soils reports, and applicable quality control procedures. If there are conflicting requirements, the more stringent shall govern (for example, highest loads, or lowest allowable stresses shall govern). All plans, calculations, and specifications for foundations that support structures shall be filed concurrently with the structure plans, calculations, and specifications;
3. Submit to the CBO the required number of copies of the structural plans, specifications, calculations, and other required documents of the designated major structures prior to the start of on-site fabrication and installation of each structure, equipment support, or foundation;
4. Ensure that the final plans, calculations, and specifications clearly reflect the inclusion of approved criteria, assumptions, and methods used to develop the design. The final designs, plans, calculations, and specifications shall be signed and stamped by the responsible design engineer; and
5. Submit to the CBO the responsible design engineer's signed statement that the final design plans conform to applicable LORS.

Verification: At least 60 days (or project owner- and CBO-approved alternative time frame) prior to the start of any increment of construction of any structure or component listed in the CBO-approved master drawing and master specifications list, the project owner shall submit to the CBO the above final design plans, specifications and calculations, with a copy of the transmittal letter to the CPM.

The project owner shall submit to the CPM, in the next monthly compliance report, a copy of a statement from the CBO that the proposed structural plans, specifications, and calculations have been approved and comply with the requirements set forth in applicable engineering LORS.

STRUC-2 The project owner shall submit to the CBO the required number of sets of the following documents related to work that has undergone CBO design review and approval:

1. Concrete cylinder strength test reports (including date of testing, date sample taken, design concrete strength, tested cylinder strength, age of test, type and size of sample, location and quantity of concrete placement from which sample was taken, and mix design designation and parameters);
2. Concrete pour sign-off sheets;
3. Bolt torque inspection reports (including location of test, date, bolt size, and recorded torques);
4. Field weld inspection reports (including type of weld, location of weld, inspection of non-destructive testing (NDT) procedure and results, welder

qualifications, certifications, qualified procedure description or number (ref: AWS); and

5. Reports covering other structural activities requiring special inspections shall be in accordance with the 2010 CBC.

Verification: If a discrepancy is discovered in any of the above data, the project owner shall, within five days, prepare and submit an NCR describing the nature of the discrepancies and the proposed corrective action to the CBO, with a copy of the transmittal letter to the CPM. The NCR shall reference the condition(s) of certification and the applicable CBC chapter and section. Within five days of resolution of the NCR, the project owner shall submit a copy of the corrective action to the CBO and the CPM.

The project owner shall transmit a copy of the CBO's approval or disapproval of the corrective action to the CPM within 15 days. If disapproved, the project owner shall advise the CPM, within five days, the reason for disapproval, and the revised corrective action to obtain CBO's approval.

STRUC-3 The project owner shall submit to the CBO design changes to the final plans required by the 2010 CBC, including the revised drawings, specifications, calculations, and a complete description of, and supporting rationale for, the proposed changes, and shall give to the CBO prior notice of the intended filing.

Verification: On a schedule suitable to the CBO, the project owner shall notify the CBO of the intended filing of design changes, and shall submit the required number of sets of revised drawings and the required number of copies of the other above-mentioned documents to the CBO, with a copy of the transmittal letter to the CPM. The project owner shall notify the CPM, via the monthly compliance report, when the CBO has approved the revised plans.

STRUC-4 Tanks and vessels containing quantities of toxic or hazardous materials exceeding amounts specified in the 2010 CBC shall, at a minimum, be designed to comply with the requirements of that chapter.

Verification: At least 30 days (or project owner- and CBO-approved alternate time frame) prior to the start of installation of the tanks or vessels containing the above specified quantities of toxic or hazardous materials, the project owner shall submit to the CBO for design review and approval final design plans, specifications, and calculations, including a copy of the signed and stamped engineer's certification.

The project owner shall send copies of the CBO approvals of plan checks to the CPM in the following monthly compliance report. The project owner shall also transmit a copy of the CBO's inspection approvals to the CPM in the monthly compliance report following completion of any inspection.

MECH-1 The project owner shall submit, for CBO design review and approval, the proposed final design, specifications and calculations for each plant major piping and plumbing system listed in the CBO-approved master drawing and master specifications list. The submittal shall also include the applicable QA/QC procedures. Upon completion of construction of any such major piping or plumbing system, the project owner shall request the CBO's inspection approval of that construction.

The responsible mechanical engineer shall stamp and sign all plans, drawings, and calculations for the major piping and plumbing systems, subject to CBO design review and approval, and submit a signed statement to the CBO when the proposed piping and plumbing systems have been designed, fabricated, and installed in accordance with all of the applicable laws, ordinances, regulations and industry standards, which may include, but are not limited to:

- American National Standards Institute (ANSI) B31.1 (Power Piping Code);
- ANSI B31.2 (Fuel Gas Piping Code);
- ANSI B31.3 (Chemical Plant and Petroleum Refinery Piping Code);
- ANSI B31.8 (Gas Transmission and Distribution Piping Code);
- NACE R.P. 0169-83;
- NACE R.P. 0187-87;
- NFPA 56;
- Title 24, California Code of Regulations, Part 5 (California Plumbing Code);
- Title 24, California Code of Regulations, Part 6 (California Energy Code, for building energy conservation systems and temperature control and ventilation systems);
- Title 24, California Code of Regulations, Part 2 (California Building Code); and
- City of Huntington Beach codes.

The CBO may deputize inspectors to carry out the functions of the code enforcement agency.

Verification: At least 30 days (or project owner- and CBO-approved alternative time frame) prior to the start of any increment of major piping or plumbing construction listed in the CBO-approved master drawing and master specifications list, the project owner shall submit to the CBO for design review and approval the final plans, specifications, and calculations, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with applicable LORS, and shall send the CPM a copy of the transmittal letter in the next monthly compliance report.

The project owner shall transmit to the CPM, in the monthly compliance report following completion of any inspection, a copy of the transmittal letter conveying the CBO's inspection approvals.

MECH-2 For all pressure vessels installed in the plant, the project owner shall submit to the CBO and California Occupational Safety and Health Administration (Cal-OSHA), prior to operation, the code certification papers and other documents required by applicable LORS. Upon completion of the installation of any pressure vessel, the project owner shall request the appropriate CBO and/or Cal-OSHA inspection of that installation.

The project owner shall:

1. Ensure that all boilers and fired and unfired pressure vessels are designed, fabricated, and installed in accordance with the appropriate section of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, or other applicable code. Vendor certification, with identification of applicable code, shall be submitted for prefabricated vessels and tanks; and
2. Have the responsible design engineer submit a statement to the CBO that the proposed final design plans, specifications, and calculations conform to all of the requirements set forth in the appropriate ASME Boiler and Pressure Vessel Code or other applicable codes.

Verification: At least 30 days (or project owner- and CBO-approved alternative time frame) prior to the start of on-site fabrication or installation of any pressure vessel, the project owner shall submit to the CBO for design review and approval, the above listed documents, including a copy of the signed and stamped engineer's certification, with a copy of the transmittal letter to the CPM.

The project owner shall transmit to the CPM, in the monthly compliance report following completion of any inspection, a copy of the transmittal letter conveying the CBO's and/or Cal-OSHA inspection approvals.

MECH-3 The project owner shall submit to the CBO for design review and approval the design plans, specifications, calculations, and quality control procedures for any heating, ventilating, air conditioning (HVAC) or refrigeration system. Packaged HVAC systems, where used, shall be identified with the appropriate manufacturer's data sheets.

The project owner shall design and install all HVAC and refrigeration systems within buildings and related structures in accordance with the CBC and other applicable codes. Upon completion of any increment of construction, the project owner shall request the CBO's inspection and approval of that construction. The final plans, specifications and calculations shall include approved criteria, assumptions, and methods used to develop the design. In addition, the responsible mechanical engineer shall sign and stamp all plans, drawings and calculations and submit a signed statement to the CBO that the proposed final design plans, specifications and calculations conform with the applicable LORS.

Verification: At least 30 days (or project owner- and CBO-approved alternative time frame) prior to the start of construction of any HVAC or refrigeration system, the project owner shall submit to the CBO the required HVAC and refrigeration calculations, plans, and specifications, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with the CBC and other applicable codes, with a copy of the transmittal letter to the CPM.

ELEC-1 Prior to the start of any increment of electrical construction for all electrical equipment and systems 110 Volts or higher (see a representative list, below) the project owner shall submit, for CBO design review and approval, the proposed final design, specifications, and calculations. Upon approval, the above listed plans, together with design changes and design change notices, shall remain on the site or at another accessible location for the operating life of the project. The project owner shall request that the CBO inspect the installation to ensure compliance with the requirements of applicable LORS. All transmission facilities (lines, switchyards, switching stations, and substations) are handled in conditions of certification in the **Transmission System Engineering** section of this document.

A. Final plant design plans shall include:

1. one-line diagram for the 13.8 kV, 4.16 kV and 480 V systems;
2. system grounding drawings;
3. lightning protection system; and
4. hazard area classification plan.

B. Final plant calculations must establish:

1. short-circuit ratings of plant equipment;
2. ampacity of feeder cables;
3. voltage drop in feeder cables;
4. system grounding requirements;
5. coordination study calculations for fuses, circuit breakers and protective relay settings for the 13.8 kV, 4.16 kV and 480 V systems;
6. system grounding requirements;
7. lighting energy calculations; and
8. 110 volt system design calculations and submittals showing feeder sizing, transformer and panel load confirmation, fixture schedules and layout plans.

C. The following activities shall be reported to the CPM in the monthly compliance report:

1. Receipt or delay of major electrical equipment;
2. Testing or energization of major electrical equipment; and
3. A signed statement by the registered electrical engineer certifying that the proposed final design plans and specifications conform to requirements set forth in the Energy Commission decision.

Verification: At least 30 days (or project owner- and CBO-approved alternative time frame) prior to the start of each increment of electrical construction, the project owner shall submit to the CBO for design review and approval the above listed documents. The project owner shall include in this submittal a copy of the signed and stamped statement from the responsible electrical engineer attesting compliance with the applicable LORS, and shall send the CPM a copy of the transmittal letter in the next monthly compliance report.

REFERENCES

HBEP 2012a – AES Southland Development, LLC / Stephen O'Kane (tn 66003). A*pplication for Certification (AFC), Volume I & II, dated, 06/27/2012*. Submitted to CEC/ Dockets on 06/27/2012.

GEOLOGY AND PALEONTOLOGY

Casey Weaver, CEG

SUMMARY OF CONCLUSIONS

The proposed Huntington Beach Energy Project (HBEP) site is located in an active geologic area along the coast of Huntington Beach in Southern California. The site is not underlain by an active fault and the site is not subject to surface fault rupture. The closest known active fault is a segment of the Newport - Inglewood Fault Zone which is located approximately one mile north of the proposed project site. Numerous active faults are located in both the onshore and offshore vicinity of the project site.

Because of its geologic setting, the site could be subject to very strong levels of earthquake-related ground shaking. The significant effects of strong ground shaking on the HBEP structures must be mitigated through structural designs required by the most recent edition of the California Building Code (CBC 2010). CBC 2010 requires that structures be designed to resist seismic stresses from anticipated maximum ground acceleration.

In addition to strong seismic shaking, the project may be subject to soil failure caused by liquefaction and/or dynamic compaction. A design-level geotechnical investigation required for the project by the CBC 2010, and proposed Conditions of Certification **GEO-1** and **GEO-2**, and proposed Conditions of Certification **Facility Design GEN-1**, **GEN-5** and **CIVIL-1**, would present standard engineering design requirements for mitigation of strong seismic shaking, liquefaction and potential excessive settlement due to dynamic compaction.

While not likely to occur during the project design life, the site is subject to inundation by tsunami. U.S. Building codes generally have not addressed the subject of designing structures in tsunami zones (Reynolds 2013). FEMA's Coastal Construction Manual (FEMA 55), developed to provide design and construction guidance for structures built in coastal areas, addresses seismic loads for coastal structures and provides information on tsunami and associated loads (SSC 2005).

Petroleum is the only economic geologic resource in the project vicinity. Oil was first discovered at Huntington Beach in 1920 (Higgins 1976). Production expanded north to Seal Beach and south into Newport Beach in subsequent years. The main production zones occurred at depth between 2500 feet and 4500 feet below ground surface. It is likely that oil reserves exist below the project site. Other than petroleum, there are no known viable minerologic or geologic resources at the proposed HBEP site.

Due to the underlying oil reserves and possibility of the production of methane gas in native soils, the site and surrounding area has been mapped as being within a Methane Overlay District. Development within a Methane Overlay District must abide by the City of Huntington Beach Methane District Building Permit Requirements. City of Huntington Beach Specification No. 429 and proposed Condition of Certification **GEO-2** would require evaluation of the potential for and mitigation of the presence of methane gas beneath the proposed site.

Fossils have not been found in close proximity to the project site. A search of the UCMP database was conducted by the applicant on January 4, 2012. No records for fossils within 1 mile of the project site were found, and no further records of fossils within the city of Huntington Beach are known (HBEP 2012a). Potential impacts to paleontological resources due to construction activities are not likely, but if discovered during construction, they would be mitigated through worker training and monitoring by qualified paleontologists, as required by proposed Conditions of Certification **PAL-1** through **PAL-8**.

Based on this information, Energy Commission staff believes that the potential adverse cumulative impacts to project facilities from geologic hazards during its design life are less than significant. Similarly, staff believes the potential adverse cumulative impacts to potential geologic, mineralogic, and paleontologic resources from the construction, operation, and closure of the proposed project, if any, are less than significant. It is staff's opinion that the proposed HBEP can be designed and constructed in accordance with all applicable laws, ordinances, regulations, and standards (LORS), and in a manner that both protects environmental quality and assures public safety.

INTRODUCTION

In this section, California Energy Commission (Energy Commission) staff discusses the potential impacts of geologic hazards on the proposed HBEP facility as well as the HBEP's potential impact on geologic, mineralogic, and paleontologic resources. Staff's objective is to identify resources that could be significantly adversely affected, evaluate the potential of the project construction and operation to significantly impact the resources and provide mitigation measures as necessary to ensure that there would be no significant adverse impacts to geological and paleontological resources during the project construction, operation, and closure and to ensure that operation of the plant would not expose occupants to high-probability geologic hazards. A brief geological and paleontological overview is provided. The section concludes with staff's proposed Conditions of Certification - *i.e.*, monitoring and mitigation measures that, if implemented, would reduce any project impacts to geologic hazards and geologic, mineralogic, and paleontologic resources to insignificant levels.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Applicable laws, ordinances, regulations and standards (LORS) are listed in the application for certification (AFC) (HBEP 2012a). The following briefly describes the current LORS for both geologic hazards and resources and mineralogic and paleontologic resources.

Geology and Paleontology Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	**Description**
Federal	The site is not located on Federal Land and there are no federal regulations directly applicable to the geological or paleontological conditions at the project site
State	
California Building Code (2010)	The California Building Code (CBC 2010) includes a series of standards that are used in project investigation, design, and construction (including seismicity, grading and erosion control). The CBC has adopted provisions in the International Building Code (IBC, 2009).
Alquist-Priolo Earthquake Fault Zoning Act, Public Resources Code (PRC), section 2621–2630	Mitigates against surface fault rupture of known active faults beneath occupied structures. Requires disclosure to potential buyers of existing real estate and a 50-foot setback for new occupied buildings.
Seismic Hazards Mapping Act, PRC section 2690–2699	Maps identify areas (zones) that are subject to the effects of strong ground shaking, such as liquefaction, landslides, tsunamis, and seiches. Requires a geotechnical report be prepared that defines and delineates any seismic hazard prior to approval of a project located in a seismic hazard zone.
CEQA, Appendix G Environmental Checklist Form	Asks if project would have impacts on paleontological and mineralogical resources or a unique geological feature.
California Building Code	Requires buildings and other construction to be designed to protect the public from geological hazards.
Local	
City of Huntington Beach General Plan	The City of Huntington Beach addresses public safety and welfare in the City through implementation of its General Plan and compliance with applicable local regulations stated in the *Huntington Beach Municipal Code*. General Plan policies specific to geologic, soil, and seismic hazards are listed in the Environmental Hazards Element.
Huntington Beach Municipal Code and Grading Ordinance	The City adopted the 2010 CBC as the basis for its own Building Code. Site development work in the City is required to comply with the *Huntington Beach Building Code* and all State requirements pertaining to geologic, soil, and seismic hazards. The Grading and Excavation Code sets forth rules and regulations to control excavation, grading, earthwork and site improvement construction, and establishes administrative requirements for issuance of permits and approvals of plans and inspection of grading construction.

Applicable Law	Description
Standards	
Society for Vertebrate Paleontology (SVP), 2010	The "Measures for Assessment and Mitigation of Adverse Impacts to Non-Renewable Paleontological Resources: Standard Procedures" is a set of procedures and standards for assessing and mitigating impacts to vertebrate paleontological resources developed by the SVP, a national organization of professional scientists. The measures were adopted in October 1995, and revised in 2010 following adoption of the Paleontological Resources Preservation Act (PRPA) of 2009.
Bureau of Land Management (BLM) Instructional Memorandum 2008-009	Provides up-to-date methodologies for assessing paleontological sensitivity and management guidelines for paleontological resources on lands managed by the Bureau of Land Management. While not required on non-BLM lands, the methodologies are useful for all paleontological studies, regardless of land ownership.

SETTING

The proposed HBEP project will be on the site of the existing Huntington Beach Generating Station (HBGS), an operating electrical generation facility on the Pacific coast in Orange County, California (**Geology and Paleontology - Figure 1**). The site is approximately 31 miles southeast of Los Angeles and approximately 80 miles northwest of San Diego, California. As detailed in the **Project Description** Section of this PSA, the HBEP will be a 939-megawatt combined-cycle power plant, consisting of two power blocks. Each power block will be composed of three combustion turbines with supplemental fired heat recovery steam generators, a steam turbine generator, an air-cooled condenser, and ancillary facilities. HBEP will reuse existing pipelines to convey onsite potable water, natural gas, storm water, process wastewater, and sanitary wastewater and existing facilities to transmit electricity. No offsite linear developments are proposed as part of the project.

REGIONAL SETTING

Formation of the western coast of North America began in late Triassic during the inception of the Mid-Atlantic rise (DeCourten 2008). Lateral crustal spreading from the mid-Atlantic rise separated the European and African continents from the North American and South American continents. This motion caused the continental North American crustal plate to migrate westward. At this time, the east Pacific rise was also active forming new oceanic crust that was spreading west forming the Pacific plate and east forming the Farallon plate. As the North American plate migrated westward, the eastern edge of the Farallon plate was overridden and subducted beneath the advancing North American plate (Atwater 1998). This crustal subduction continued into the Miocoene (Yeats 2010). As the Farallon plate disappeared into the subduction zone, the East Pacific Rise reached the western edge of the continent and the northern end of the Peninsular Ranges became deformed (Yeats2010). This deformation caused the Channel Islands-San Nicolas Island crustal block and the Santa Monica Mountains crustal block to move west from the Peninsular Ranges, leaving behind a rift which became the Los Angeles basin (Yeats 2010). The Los Angeles Basin then became filled with late Cenozoic marine sediments which overlie diversely oriented Mesozoic basement rocks.

In early Miocene, plate motion slowly shifted from subduction along the western margin of the North American Continent to transform faulting. As the area was subjected to simple right-lateral shear in late Miocene and early Pliocene time, the pre-existing faults in the Mesozoic basement rocks (formed during the earlier subduction period), propagated upward into the Cenozoic marine sediments as transform fault systems. The orientation of these "new" transform fault systems was controlled by the orientation of the older faults. Localization of shear within these faults caused the older, diversely oriented normal and reverse faults to become inactive as shear stresses reoccupied these pre-existing structures producing the shear (strike–slip) system of today (Yeats 2010).

Geologically, the Los Angeles Basin and vicinity are divided into four structural blocks related to uplifted zones and synclinal depressions, and are bounded by faults. The project site lies near the boundary of the Southwest Block and Central Block, near the Newport-Inglewood fault zone (Ninyo 2011). According to State of California Division of Oil and Gas, and Geothermal Resources Map 136, the project site and surrounding area are situated within the West Newport Oil Field (**Geology and Paleontology - Figure 2**). The West Newport Oil Field is part of the larger Huntington Beach oil field, which is associated with what is referred to as the Newport-Inglewood Structural Trend (Magorien 2002). A number of other significant oil fields are located along the Newport-Inglewood Structural Trend, all of which owe their existence to the Newport-Inglewood fault. Associated with the Newport-Inglewood fault zone is the San Joaquin Blind Thrust (Grant 2002). The San Joaquin Blind Thrust is responsible for the formation of the San Joaquin anticline that stretches from Dana Point to Seal Beach.

The San Joaquin Blind Thrust has uplifted marine sediments forming the Newport and the Huntington Mesas. It is likely that anticlinal folding along the San Joaquin Blind Thrust diverted the Santa Ana River from maintaining its flow through Newport Bay, causing it to be deflected around the westward plunging nose of the anticline westerly to the area around Fountain Valley (Mueller 2005).

After being deflected from its course flowing through Newport Bay, the Santa Ana River cut its way through the lower, slower uplifting western limb of the anticline forming a water gap in the area between Huntington Beach and Newport Beach (**Geology and Paleontology - Figure 3**). The project site is located within this gap, locally referred to as the Santa Ana Gap (Magorien 2002).

The erosion that created the gap began in Late Pleistocene (approximately 60,000 years ago) and continued until the end of the last glacial period approximately 11,000 years ago. The combination of a lowered sea level and accelerated stream erosion produced a river valley that grew to approximately 200 feet deep and several miles wide (Magorien 2002). At the end of the glacial period, the sea level began to rise and the ancestral river began backfilling the valley eventually forming the existing coastal plain on which the site is located.

The coastal plain contains coastal alluvial deposits (gravels, sands, and silts), aeolian deposits (well sorted fine grain windblown sand), estuarian deposits (organic silts and clays) and near shore marine deposits (predominantly well sorted medium grain sand) (Ninyo 2011).

PROJECT SITE DESCRIPTION

The HBEP site is located in the coastal zone of southern California in an industrial area of Huntington Beach, just north of the intersection of the Pacific Coast Highway (Highway 1) and Newland Street. The HBEP site is bounded on the west by a manufactured home/recreational vehicle park, on the north by a derelict tank farm, on the north and east by the Huntington Beach Channel and residential areas, on the southeast by the Huntington Beach Wetland Preserve/Magnolia Marsh wetlands, and to the south and southwest by the Huntington Beach State Park and the Pacific Ocean **Geology and Paleontology - Figure 4**).

The project is located on the site of the existing Huntington Beach Generating Station, an operating electrical generation facility. The site currently consists of four parcels of land with four power generating units comprising a total of approximately 46.23 acres. Each unit is comprised of a control room, boiler, turbine and other support facilities. The entire site is covered with asphalt or concrete pavement.

As part of the preliminary on-site geotechnical investigation, 2 small diameter exploratory borings were drilled and 4 Cone Penetration Tests (CPT) were driven in the east central portion of the site (Ninyo 2011). The borings were drilled to maximum depths of 51.5 feet below ground surface (bgs) and the CPTs were driven to final depths of approximately 75.5 feet.

Groundwater was observed at a depth of 14 feet bgs in the borings. However, this observation was not considered to be representative of stabilized ground water conditions (Ninyo 2011). As presented in the Preliminary Geotechnical Report, groundwater has historically been as high as 3 feet bgs in the site vicinity. It is likely that the reference to depth to groundwater described in the Ninyo & Moore report was based on measurements using the natural ground surface at the datum from which the measurements were made, rather than the elevated fill surface of the project site.

Based on the grading plans presented in the AFC, the elevation of the site in the vicinity of the Ninyo & Moore investigation is approximately 12 feet above sea level (HBEP 2012a). Therefore, Ninyo & Moore’s measured non stabilized depth to water of 14 feet below ground surface would equate to a groundwater elevation of approximately 2 feet below sea level.

Due to the site’s location adjacent to the ocean and the porous nature of the underlying sediments, it is likely that site soils are saturated with sea water at an elevation equal to mean sea level. Freshwater is less dense than sea water. Therefore, assuming a blanket of freshwater is “floating” on the seawater saturated soils, it is likely that the stabilized groundwater elevation is at least 2 feet above mean sea level. Fluctuations in the depth to groundwater are likely to occur due to tidal variations, seasonal precipitation, and variation in surface elevations, groundwater pumping (dewatering), and projected sea level rise.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

This section assesses two types of impacts. The first is the potential impacts the proposed facility could have on existing geologic, mineralogic, and paleontologic resources in the area. The second is the potential geologic hazards, which could adversely affect the proper functioning of the proposed facility and create life/safety concerns.

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

The California Environmental Quality Act (CEQA) guidelines, Appendix G, provide a checklist of questions that lead agencies typically address when assessing impacts related to geologic and mineralogic resources, and effects of geologic hazards.

- Section (V) (c) includes guidelines that determine if a project will either directly or indirectly destroy a unique paleontological resource or site, or a unique geological feature.
- Sections (VI) (a), (b), (c), (d), and (e) focus on whether or not the project would expose persons or structures to geologic hazards.
- Sections (XI) (a) and (b) concern the project's effects on mineral resources.

To assess potential impacts on unique geologic features and effects on mineral resources, staff has reviewed geologic and mineral resource maps for the surrounding area, as well as site-specific information provided by the applicant, to determine if geologic and mineralogic resources exist in the area.

To assess potential impacts on paleontological resources, staff reviewed existing paleontologic information and reviewed the information obtained from the applicant's requested records searches from the San Bernardino County Museum for the surrounding area. The University of California (at Berkeley) Museum of Paleontology's (UCMP) website, which gives generalized information for locality records of their collection, and site-specific information generated by the applicant for the proposed HBEP was also reviewed. All research was conducted in accordance with accepted assessment protocol (BLM 2008 and SVP 2010) to determine whether any known paleontologic resources exist in the general area. If present or likely to be present, Conditions of Certification which outline required procedures to mitigate adverse affects to potential resources are proposed as part of the project's approval.

The California Building Standards Code (CBSC) and CBC 2010 provide geotechnical and geological investigation and design guidelines, which engineers must follow when designing a facility. As a result, the criterion used to assess the significance of a geologic hazard includes evaluating each hazard's potential impact on the design, construction, and operation of the proposed facility. Geologic hazards include faulting and seismicity, liquefaction, dynamic compaction, hydrocompaction, subsidence, expansive soils, landslides, tsunamis, seiches, and others as may be dictated by site-specific conditions.

DIRECT/INDIRECT IMPACTS AND MITIGATION

An assessment of the potential impacts to geologic, mineralogic, and paleontologic resources, and from geologic hazards is provided below. The assessment of impacts is followed by a summary of potential impacts that may occur during construction and operation of the project and provides recommended conditions of certification that would ensure potential impacts are mitigated to a level that is less than significant. The recommended Conditions of Certification would allow the Energy Commission's compliance project manager (CPM) and the applicant to adopt a compliance monitoring scheme ensuring ongoing compliance with LORS applicable to geologic hazards and the protection of geologic, mineralogic, and paleontologic resources.

GEOLOGIC AND MINERALOGIC RESOURCES

At the HBEP site, the geologic units at the surface and in the subsurface are widespread alluvial deposits that occur throughout the Huntington Beach area (**Geology and Paleontology - Figure 5).** These geologic units are not unique in terms of recreational, commercial, or scientific value.

The Huntington Beach area has been the site of the extraction of oil and gas, sand and gravel, and peat products over many years. Large-scale oil and gas production has occurred since the 1920s and continues to the present time.

According to online maps of the California Division of Oil, Gas and Geothermal Resources (DOGGR 2012), oil and natural gas deposits are present in the wider project area. The city of Huntington Beach lies over several oil producing areas, comprising the Talbert, Sunset Beach, West Newport, and Huntington Beach oil fields. These oil fields and several others associated with the Newport Inglewood Fault Zone have produced more than five billion barrels of oil (Higgins 1976). Oil and gas wells in Huntington Beach are scattered throughout much of the city. Most are concentrated along the coastal areas and mesas of the city. Recently, oil production has decreased due to dwindling capacity in local oil reserves and the expenses incurred in oil extraction (Higgins 1976). The HBEP site specifically overlies the West Newport oil field. Within this field, there are many plugged or abandoned wells located near the project site. Abandoned wells within 2 miles of the project site are shown on **Geology and Paleontology - Figure 6**.

R.W. McClellan and Sons operated a peat production facility in the site vicinity from 1941 to 1954 (Huntington 1996a). Their operation ceased when the City of Huntington Beach acquired the property in 1954. No further mining of peat or other soil conditioners is known to occur at the present time (Huntington 1996a).

In 1982, the California Division of Mines and Geology published a comprehensive mineral land classification for aggregate materials in the Orange County area. Based on this investigation, the HBEP site is mapped as an area with no aggregate significance. The Resources Element of the Orange County General Plan indicates that significant mineral deposits are not present in the project area (Orange 2011). Based on the Orange County General Plan (Orange 2011) and the City of Huntington Beach General Plan (Huntington 1996a), no known active areas of mining for mineral resources occur near the HBEP site.

Based on the information above, it is staff's opinion that the project would have no effect on oil and gas production or on other geologic resources of commercial value or on the availability of such resources and would not have any significant adverse direct or indirect impacts to potential geologic and mineralogic resources.

PALEONTOLOGIC RESOURCES

The project site is mantled with approximately five to ten feet of artificial fill material. Beneath the fill are native soils consisting of alluvial, estuarine and marine sediments. The upper 60 feet of the native soils consist of Holocene coastal marine sediments ranging in age from 8,600 years old to the present (Magorien 2002). At a depth between 60 and 90 feet, the marine sediments are considered to be middle to late Holocene in age (8,600–11,000 years ago) (Magorien 2002).

Underlying the Holocene deposits are sediments of the Pleistocene Palos Verdes Formation. The Palos Verdes Formation consists of greenish-gray, fine- to medium-grained sand with traces of silt and clay. Within the Palos Verdes Formation is a unit referred to as the Palos Verdes Sand. The Palos Verdes Sand is a fossiliferous layer of marine gray sands and gravels (BonTerra 2010). This unit was deposited between 95,000 and 130,000 years before present and has produced a large number of fish fossils, as well as the remains of terrestrial and aquatic birds and mammals (BonTerra 2010). Although primarily known for its fossil mollusks, the Palos Verdes Sand has yielded remains of sharks, bony fish, birds, and marine mammals (BonTerra 2010). In addition to the marine fossils, a number of large, extinct, Ice Age land mammals such as mammoth, mastodon, bison, horse, and camel have been found (BonTerra 2010). The Palos Verdes Sand represents a time when coastal waters off Southern California were several degrees warmer than today (BonTerra 2010).

Beneath the Palos Verdes Formation lies the San Pedro Sand (BonTerra 2010). The San Pedro Sand consists of gray to dark gray to reddish-yellow (rust)-stained siltstone and clayey siltstone with friable, interbedded fine to gravelly coarse grained sandstones. Based on sedimentary structures and variable lithologies, this rock unit represents a wide range of depositional environments. These environments range from nearshore, shallow marine to lagoonal, to back-bay tidal flat (BonTerra 2010).

In the San Pedro area, the San Pedro Sand has yielded crustaceans, marine mollusks (clams and snails), bony fish and sharks, amphibians, and birds (BonTerra 2010). Large late Pleistocene extinct mammals found there include *Bison*, *Mammuthus* (mammoth), *Paramylodon* (sloth), *Equus* (horse), and *Capromeryx* (very small antelope). In addition to the large extinct mammals, extant pond turtle, rabbits, rodents, and marine mammals also occur. Recent amino acid dating of marine mollusks from the San Pedro Sand in the Palos Verdes Hills has yielded dates of 330,000 years before present (Ponti 1989).

During the course of the field reconnaissance conducted for the nearby Banning Ranch project (BonTerra 2010), three shell bearing fossiliferous sites were found in deposits mapped as San Pedro Sand. The fossil sites represent the first recognized fossils from the San Pedro Sand in Orange County (BonTerra 2010).

Beneath the Pleistocene San Pedro Sand is the Pliocene Pico Formation. The Pico Formation is composed of marine sands, silts, and clays, and extends nearly a thousand feet below the base of the San Pedro Sand (BonTerra 2010). The uppermost portion of this unit is composed of silts and clays, with local lenses of gravel, while the lowermost portion of this unit is composed of sands and gravels. This unit, and those underlying it, was not analyzed in detail, because they lie well below the depth of any anticipated construction activity.

Chiefly marine Pleistocene, Pliocene, and Miocene rocks and sediments extend several thousand feet below these upper units. These deeper, older units are important for oil and natural gas production, but occur at depths below those likely to be reached during construction of the HBEP (BonTerra 2010). Further below these units, at over 9,000 feet bgs, lies highly weathered crystalline basement rock of presumed Jurassic age (Bon Terra 2010).

A search of the UCMP and PaleoBiology databases was conducted by the applicant on January 4, 2012 (HBEP 2012a). Regionally, vertebrate fossils are recorded from the Pico, Repetto, Puente, and Topanga formations. These include the remains of mammals, birds, and fish. Because these units are unknown in the project vicinity, and therefore unlikely to be encountered during construction, they were not analyzed in detail.

The database search also specifically queried Quaternary fossil site records within Orange County. Over 900 fossil sites have been found in the county. Most of the sites are located far from the project site. However, numerous coastal sites within 5 miles of the project area, including Seal Beach, Bolsa Bay, Sunset Beach, and Newport Bay have produced invertebrate and limited vertebrate fossil faunas (BonTerra 2010). The results are predominately Holocene invertebrate fossils and therefore, do not represent paleontological resources normally considered scientifically significant. The exception to this is Newport Bay, which has produced Pleistocene invertebrate fossils from the San Pedro Formation and Pleistocene vertebrate and invertebrate fossils from the Palos Verdes Sand. Neither of these units is known to underlie the project area at depths expected to be affected by project construction and neither outcrop within 1 mile of the project area. No fossil sites were recorded for Huntington Beach in the UCMP database or PaleoBiology Database and no records were found within the Holocene and Pleistocene sediments underlying the project area (HBEP 2012a).

The applicant augmented the database review with a literature review (HBEP 2012a). One record for Rancholabrean-age vertebrate fossils was found for Huntington Beach, and includes mammoth and bison fossils of Rancholabrean (Late Pleistocene) age. The mammoth specimen was found immediately above a coarse sand unit and was uncovered between 6 and 8 feet below soil level, while the bison jaw was recovered from diatomaceous sandstone 14 to 20 feet below soil level (Miller 1971). No records for fossils within 1 mile of the project site were found, and no further records of fossils within the city of Huntington Beach are known.

Because the entire project area is highly developed, no paleontological resources survey was conducted by the applicant. As noted previously, a reconnaissance-level field review conducted by the applicant confirmed that no native sediment is present at the surface, and that the majority of the project site is covered by concrete or blacktop.

Even though the site is developed and paved and mantled with artificial fill, excavations are proposed for project construction. If the excavations extend through the fill, native soils may be encountered. There is a low potential for significant fossils to be encountered in the excavations. However, the possibility of encountering fossils remains. Therefore, staff considers monitoring of construction activities in accordance with the proposed Conditions of Certification is necessary. Proposed Conditions of Certification **PAL-1** to **PAL-8** are designed to mitigate any potential paleontological resource impacts, as discussed above, to a less than significant level. Essentially, these conditions would require a worker education program in conjunction with monitoring of proposed earthwork activities by qualified professional paleontologists (paleontologic resource specialist; PRS).

Earthwork would be halted in the immediate area of the find at any time potential fossils are recognized by either the paleontological monitor or the worker. When properly implemented, the Conditions of Certification would yield a net gain to the science of paleontology since fossils that would not otherwise have been discovered can be collected, identified, studied, and properly curated. A paleontological resource specialist would be retained for the proposed project by the applicant to produce a monitoring and mitigation plan, conduct the worker training, and provide the on-site monitoring. During the monitoring, the PRS can petition the CEC for a change in the monitoring protocol. Most commonly, this would be a request for lesser monitoring after sufficient monitoring has been performed to ascertain that there is little chance of finding significant fossils. In other cases, the PRS can propose increased monitoring due to unexpected fossil discoveries or in response to repeated out-of-compliance incidents by the earthwork contractor.

GEOLOGICAL HAZARDS

The AFC provides documentation of potential geologic hazards at the proposed HBEP plant site. Staff reviewed information presented in the AFC and conducted independent research regarding the site's susceptibility to geologic hazards. Staff believes that the possibility of geologic hazards affecting plant operations, during its practical design life (40 years), would be low. However, the potential and probability for the site to be affected by geologic hazards such as strong seismic shaking, liquefaction and dynamic compaction, would need to be addressed in a project geotechnical report per CBC 2010 requirements. Recommendations from the geotechnical report should be incorporated in project design.

Staff's independent research included the review of available geologic maps, reports, and related data of the proposed HBEP plant site. Geological information from the California Geological Survey (CGS), California Division of Mines and Geology (CDMG), and other governmental organizations was reviewed. Staff's analysis of this information is provided below.

Faulting and Seismicity

In southern California, tectonic deformation between the Pacific and North American plates is accommodated primarily by a zone of northwest trending strike-slip faults; however, within this complex zone of shear, areas of compression also occur. Major active and potentially faults in the region are shown on **Geology and Paleontology -**

Figure 7. Most of the tectonic deformation in southern California occurs along strike slip faults associated with the on land portion of the San Andreas fault system. In addition to the on land faults, the tectonic shear is shared with faults in the offshore inner Continental Borderland region (Grant 2004) (**Geology and Paleontology - Figure 8)**.

In 2002, Grant and Rockwell postulated that an active 300-km-long Coastal Fault zone extends between the Los Angeles basin and coastal Baja California (Grant 2002). This Coastal Fault zone includes those faults contained within the inner Continental Borderland which become contiguous with the Agua Blanca fault in Baja California (Grant 2004). The Agua Blanca fault is considered to have a slip rate between 5 and 7 millimeters/year (Rockwell 2012). That slip is believed to be transferred to the offshore faults within the inner Continental Borderland (Rockwell 2012). The geometry and slip rate of faults in the inner Continental Borderland are poorly constrained relative to onshore faults, yet they may pose significant seismic risk because they are close to populated areas, and several offshore faults appear to displace seafloor sediments (Legg, 1991).

Active faults in southern California associated with shear between the north American and Pacific plates include (from east to west), the San Andreas fault zone, the San Jacinto fault zone, the Elsinore fault zone, the Whittier fault zone, the Newport-Inglewood fault zone, the Palos Verdes fault zone, the San Diego Trough fault zone and the San Clemente fault zone. Faults specific to the inner Continental Borderland include the Newport-Inglewood fault zone, the Palos Verdes fault zone, the San Diego Trough fault zone and the San Clemente fault zone (Legg 2002).

In addition to transform strike slip faulting, tectonic compression in the southern California area has formed folds (anticlines and synclines), reverse faults and blind thrust faults (Blind thrusts). Blind thrusts underlie regions undergoing contraction in the Los Angeles Basin and are expressed at the surface only as active folds. The Compton-Los Alamitos fault and the San Joaquin Blind thrust are examples of this style of deformation. Seismic hazards posed by active thrusts are assessed in the Los Angeles Basin by a number of means, all of which are aimed at placing constraints on fault slip rates, earthquake recurrence and fault geometry and segmentation (Mueller 2005). Research into the relationship between fault slip, fault geometry and fold growth thus provides insight into the occurrence of earthquakes produced on these structures. Large earthquakes originating on blind thrusts within Southern California have occurred in the past century, illuminating their geometry and potential for seismic hazard and include the Mw5.9 1987 Whittier Narrows earthquake and the Mw6.8 1994 Northridge earthquake. It is likely that in 1769, a M7+ earthquake occurred on the San Joaquin Blind thrust which uplifted coastal Orange County approximately 10 feet (Grant 2004).

Active faults with a potential to affect the HBEP site are listed and described below and their locations presented on **Geology and Paleontology - Figures 7 and 8)**:

San Andreas Fault Zone

The San Andreas is the "master" fault of an intricate fault system that defines the boundary between the Pacific and North American crustal plates in California (Schulz 1992). The entire San Andreas fault system is more than 800 miles long and extends to depths of at least 10 miles within the Earth. In detail, the fault is a complex zone of crushed and broken rock from a few hundred feet to a mile wide. Many smaller faults branch from and join the San Andreas fault zone.

Over much of its length, a linear trough reveals the presence of the San Andreas fault; from the air, the linear arrangement of lakes, bays, and valleys in this trough is striking. Viewed from the ground, however, the features are more subtle. For example, many people driving near Crystal Springs Reservoir, near San Francisco, or along Tomales Bay, or through Cajon or Tejon Passes may not realize that they are within the San Andreas fault zone. On the ground, the fault can be recognized by carefully inspecting the landscape. The fault zone is marked by distinctive landforms that include long straight escarpments, narrow ridges, and small undrained ponds formed by the settling of small blocks within the zone. Many stream channels characteristically jog sharply to the right where they cross the fault.

At least 350 miles of offset has occurred along the San Andreas fault since it came into being about 15-20 million years ago (Schulz 1992). Surveying demonstrates the strain (displacement) occurs along the fault at the rate of approximately 2 inches per year.

San Jacinto Fault Zone

The San Jacinto fault zone is one of the major branches of the San Andreas fault system in southern California (Sharp 1965).

The San Jacinto fault zone is a complex zone of splaying and overlapping strike-slip fault segments, steps and bends, and associated zones of contractional and extensional deformation (Dorsey 2002). Offsets on basement piercing points and Pleistocene strata indicate that about 25 km of slip has accumulated on the San Jacinto fault during the past 1.5 to 2.0 Ma (Dorsey 2002). Based on GPS studies and offsets of dated Quaternary deposits, the rate of slip on the San Jacinto system is generally agreed to be ~10-12 mm/yr. This represents 20-25 percent of the present-day Pacific-North American relative plate motion (Dorsey 2002).

The straightness, continuity, and high seismicity of the San Jacinto fault zone suggest that it may be currently the most important member of the San Andreas fault system in southern California (Sharp 1965).

Elsinore Fault Zone

The Elsinore fault zone parallels the San Jacinto and is part of the same right-lateral crustal plate strain system as the San Andreas and the San Jacinto (ECI 2000).The Elsinore branches into the Whittier fault near Santa Ana Canyon, where it borders the Puente Hills to the southwest and the Chino fault to the northeast. The most apparent displacements on the Whittier-Elsinore have been vertical, as evidenced by the steep scarp (an earthquake-built cliff) along the Santa Ana Mountains.

Whittier Fault Zone

The Whittier fault zone is exposed for a distance of about 25 miles along the south slopes of the Puente Hills from the Whittier Narrows on the northwest to the Santa Ana River near its southwest end (Yerkes 1965). In the vicinity of the Santa Ana River, it joins with the northern end of the Elsinore Fault Zone. Recent deformation along the

Whittier Fault Zone is indicated by steeply tilted and locally overturned strata of late Pleistocene age (Yerkes 1965). Trenching along the fault has uncovered evidence of recent offsets, including faulted Holocene alluvium dated at 1400 to 2200 years before present (Gath 1988).

Compton-Los Alamitos Fault Zone

The Compton blind thrust fault is active and has generated at least six large-magnitude earthquakes (M_w 7.0–7.4) during the past 14,000 years (Leon 2009). Deformed Holocene strata record recent activity on the Compton thrust and are marked by discrete sequences that thicken repeatedly across a series of buried fold scarps. Minimum uplift in each of the scarp-forming events, which occurred at 0.7–1.75 thousand years ago (ka) (event 1), 0.7–3.4 ka or 1.9–3.4 ka (event 2), 5.6–7.2 ka (event 3), 5.4–8.4 ka (event 4), 10.3–12.5 ka (event 5), and 10.3–13.7 ka (event 6), ranged from ~0.6 to ~1.9 m, indicating minimum thrust displacements of ≥1.3 to 4.2 m. Such large displacements are consistent with the occurrence of large-magnitude earthquakes ($M_w \geq 7$). This large, concealed fault underlies the Los Angeles metropolitan area and thus poses one of the largest deterministic seismic risks in the United States (Leon 2009).

San Joaquin Hills Blind Thrust

The late Quaternary uplift rate of the San Joaquin Hills is approximately twice as high as uplift rates parallel to the Newport-Inglewood Fault Zone (NIFZ) along the coast to the south (Grant 2002). Several observations suggest that the San Joaquin Hills are underlain by a fault that is distinct from the NIFZ, although they may be linked kinematically. There are several Quaternary anticlines along the NIFZ north of the San Joaquin Hills (Grant 2002). However, the San Joaquin Hills anticline is longer and has the greatest topographic expression. Other topographically prominent anticlines, such as Signal Hill, are located within the structurally complex NIFZ and are associated with step-overs (Barrows, 1974).

Geomorphic studies along the coastline in the vicinity of the San Joaquin Hills have discovered emergent shorelines along the open coast and an elevated marsh bench in Newport Back Bay. The surface of the marsh bench is approximately 5 feet above the current marsh elevation (Grant 2002). Radiocarbon dating and interpretation of the introduction of exotic pollens contained within the elevated marsh bench indicates that the marsh bench was uplifted between the years 1635 and 1797 (Grant 2002).
On July 28, 1769 a strong temblor was described by explorer Gaspar de Portola while he was in the central Los Angeles basin area (Townley 1939). The mainshock was described as violent, and at least two dozen earthquakes followed it over the course of several days. It is likely that the 1769 San Joaquin Hills earthquake occurred on the San Joaquin Blind Thrust and was responsible for the uplift of the elevated marsh bench in Newport Bay and the emergent shorelines along the open coastline (Grant 2002). The San Joaquin earthquake may be the largest known earthquake that has originated within the greater Los Angeles region in the last few centuries (Grant 2002).

Newport-Inglewood Fault Zone

The Newport-Inglewood fault zone (NIFZ) is approximately 1.5-2.5 km wide, trends N45-60W, is mainly a right-lateral tectonic structure that extends from the Santa Monica

Mountains on the north to offshore connection with the Rose Canyon fault at San Diego on the south (Shlemon 2008). Known active fault traces in the NIFZ zone of deformation have been mapped in Alquist-Priolo Special Studies Zones (CDMG 1997).

The Newport–Inglewood fault zone (NIFZ) was first identified as a significant threat to southern California residents in 1933 when it generated the M6.3 Long Beach earthquake, killing 115 people and providing motivation for passage of the first seismic safety legislation in the United States (Grant 2004).

Ongoing studies indicate the NIFZ is capable of generating earthquakes with magnitudes up to 7.4 Mw (Toppozada 1989) or 7.5Mw (Petersen 2008). The higher magnitude indicated by Petersen uses a fault length of 208 km as described by Shlemon (2008). At its closest approach, the active trace of the NIFZ lies approximately 1 mile north of the project site (**Geology and Paleontology - Figure 9)**.

Some of the earliest mapping of the NIFZ was conducted by J. F. Poland (Poland 1956). Understanding that continued development and accelerated withdrawal of groundwater in the southern Los Angeles basin could result in migration of saltwater into the coastal portions of the aquifer, Poland et. al., studied the geologic conditions affecting groundwater in the Long Beach-Newport Beach coastal area (Poland 1956). Poland reviewed water well logs, electronic well logs from oil wells, studied surficial geomorphic and geologic features, and compared water chemistry from samples collected from water wells. In his study, Poland identified the Newport-Inglewood structural zone as a potential barrier to saltwater intrusion into the inland aquifer. In his study, Poland emphasizes that the occurrence of faults in the area is inferred, that the structure is not sufficiently defined to warrant graphical section and that the geologic, hydrologic and geochemical evidence does not prove or disprove that the inferred faults transect deposits of Pleistocene age (Poland 1956). On his large scale map that accompanies the report, Poland identified the approximate queried location of an inferred concealed fault trending from the area near the mouth of the Santa Ana River, northwest onto the Huntington Mesa (Poland 1956).

Adjacent to the northern boundary of the project site, the trace of a concealed fault has been shown on numerous maps and labeled as the South Branch of the NIFZ (Huntington 2008) (**Geology and Paleontology - Figure 10)**. This fault location was depicted on a map (CDMG Bulletin 204) prepared by P.K. Morton (Morton 1981) that reference Poland's work (Poland 1956), but was largely developed to show mines and mineral deposits in Orange county. Faults depicted as the NIFZ on another map (U.S. Geological Survey Open-File Report 99-172) prepared by D.M. Morton (Morton 2004), were compiled from information developed by Jahns (Jahns 1954) and Rogers (Rogers 1965). Rogers 1965 map referenced both Jahn's 1954 and Poland's 1956 maps. As both of these newer maps (Morton 1981, Morton 2004), are compilations of previous information, they both show the South Branch fault as a concealed fault in identical locations.

As a constraint to his mapping, D.M Morton stated, "*The Santa Ana 30' X 60' geologic-map database should be used to evaluate and understand the geologic character of the Santa Ana 30' X 60' quadrangle as a whole. The data should not be used for purposes of site-specific land-use planning or site-specific geologic evaluations. The database is* *sufficiently detailed to identify and characterize many actual and potential geologic hazards represented by faults and landslides and posed by ground subsidence and earthquake-generated ground shaking. However, it is not sufficiently detailed for site-specific determinations or evaluations of these features. Faults shown do not take the place of fault-rupture hazard zones designated by the California State Geologist (see Hart, 1988)*" (Morton 2004). However, it appears that this map has been used by several investigators for site- specific land- use planning (Huntington 2008) and site-specific geologic evaluations (Ninyo 2011).

In 1988, the subsurface location of the South Branch Fault was constrained by W. A. Bryant using data collected from local oil wells (Bryant 1988). Using that data, Bryant interpreted a "fault" to be one that offset all lithologic units beneath the depth of a contoured stratigraphic horizon (Bryant 1988, Plate 1). The horizon used in Bryant's work was measured at a depth of 730 meters (2,395 feet) below sea level. Plate 1 of Bryant's study indicates the fault is in the subsurface and no surface trace is visible (Bryant 1988). Further, Bryant's map of recently active traces of the Newport Inglewood fault zone shows the subsurface trace approximately 1,000 feet northeast of the project site and trending northwest beneath the ASCON landfill (**Geology and Paleontology - Figure 11**).

The Southern Newport-Inglewood fault was investigated by CGS in the early phases of fault evaluation under the Alquist-Priolo Special Studies Zone Act of 1972 and under the subsequent Alquist-Priolo Earthquake Fault Zoning Act of 1994 (PBS&J 2009). The Fault Evaluation Report (CGS 1985) and its Supplement (CGS 1986a), were prepared to decide which of the numerous segments of the Southern Newport Inglewood fault were to be designated under the Act and "zoned" for special studies in the event structures for human occupancy were proposed that could be underlain by active traces of these faults. Only the North Branch and Seal Beach faults were considered to meet the criteria of sufficient activity and definition to be zoned under the Act (**Geology and Paleontology - Figure 9)**. Based on field investigations, aerial photo interpretation, reviewing previous geological and fault studies, as well as articles appearing in publications by CGS, USGS, the California Department of Water Resources (DWR), or in peer-reviewed journals, CGS concluded that both faults (Seal Beach and North Branch) probably had been active as recently as very latest Pleistocene time, i.e. between 15,000 and 20,000 years ago, but that there was sufficient evidence only for the North Branch fault to indicate it had undergone Holocene displacement, i.e., during the last 11,000 years. Consequently, although the City recognizes eight faults of different activity levels crossing the Specific Plan Area south of Ellis Avenue, only the trace of the North Branch fault at Adams and Beach was delineated by the State as an Earthquake Fault Zone (PBS&J 2009)(**Geology and Paleontology - Figure 9)**.

CGS has an ongoing program to update earthquake fault zoning decisions. Updates occurred in the vicinity of the City of Huntington Beach in 1990, 1991, 2003, and 2007, but the North Branch fault remained the only zoned source of possible surface faulting in the Specific Plan Area. This does not mean there is no threat of surface rupture along the other fault traces: only that the current state of knowledge about them does not indicate whether a threat is present (PBS&J 2009).

Extensive faulting-related studies on the Newport–Inglewood South Branch Fault by Leighton & Associates for the Bolsa Chica Project suggests that the South Branch Fault is neither active nor potentially active (GMU 2011).

Preliminary geotechnical studies conducted in 2002 at the northerly adjacent proposed Poseidon facility concluded that there is little specific evidence of the existence of the South Branch fault beneath the proposed Poseidon property (GeoLogic 2002). Further, GeoLogic cites the Bryant study and concludes "the closest fault segment of the NIFZ is an inferred trace with no surface expression lying approximately 1,000 feet northeast of the North Tank site" (GeoLogic 2002).

However, geodetic studies conducted by Orange Coast College found that survey stations installed across a potential restraining bend along the South Branch of the Newport-Inglewood fault zone appear to be converging at a high rate (Bender 2001). Assuming that surface motions accurately depict subsurface conditions, this may possibly indicate that strain is accumulating at depth indicating activity of the South Branch Fault (Bender 2001).

Palos Verdes Fault Zone

The Palos Verdes Fault Zone extends southwestward from the northern part of Santa Monica Bay to the area southwest of Lasuen Knoll, offshore from Dana Point (Fisher 2004).The structure of the Palos Verdes Fault Zone changes markedly southeastward across the San Pedro Shelf and slope. Under the northern part of the shelf, this fault zone includes several strands, but the main strand dips west and is probably an oblique-slip fault (Fisher 2004). Under the slope, this fault zone consists of several fault strands having normal separation, most of which dip moderately east. To the southeast near Lasuen Knoll, the Palos Verdes Fault Zone locally is a low angle fault that dips east, but elsewhere near this knoll the fault appears to dip steeply. Fresh sea-floor scarps near Lasuen Knoll indicate recent fault movement (Fisher 2004).

Analysis of wave-cut terraces and offset stream courses indicates total fault-slip rate to be around 3 mm/yr. (Fisher 2004). The main style of movement along the Palos Verdes Fault Zone has been strike slip and multibeam bathymetric data show recent scarps along this fault near Lasuen Knoll indicating the fault's recent activity.

San Diego Trough Fault Zone

The San Diego Trough Fault Zone runs roughly from the Mexican border northward toward Catalina Island. The San Diego trough fault zone (SDTFZ) is part of a 90-km-wide zone of faults within the inner Continental Borderland that accommodates motion between the Pacific and North American plates (Ryan 2012). New seismic reflection data shows that the fault zone steps across a 5-km-wide stepover and continues for an additional 60 km north of its previously mapped extent. At the latitude of Santa Catalina Island, the SDTFZ bends 20° to the west and may be linked via a complex zone of folds with the Palos Verdes fault zone (PVFZ). If this is the case, this fault zone would be one of the longest in the California Borderland, and could produce some of the largest earthquakes in the region (Poppick 2013). The 1986 epicenter of the Oceanside earthquake (a magnitude 5.4 quake that caused nearly one million dollars in damage, 29 injuries, and one death) and the associated 1986 earthquake swarm is located within the SDTFZ (Poppick 2013). In a cooperative program between the U.S. Geological Survey (USGS) and the Monterey Bay Aquarium Research Institute (MBARI), the coseismic offset of a submarine channel that intersects the fault zone near the SDTFZ– PVFV junction was measured and dated. This research indicated an estimated horizontal slip rate of about 1.5±0.3 mm/yr over the past 12,270 yr (Ryan 2012).

San Clemente Fault Zone

The San Clemente fault zone is the westernmost of the group of right lateral faults traversing the California Inner Continental Borderland (Legg 1989). The main trace of the San Clemente fault cuts a straight path directly across the rugged topography of the region, displaying evidence of a steeply dipping (near vertical) fault surface. Modern tectonic activity along the San Clemente fault zone is demonstrated by numerous earthquakes with epicenters located along the fault's trend. The average strike of the San Clemente fault is parallel to the Pacific-North American relative plate motion vector at this location and is a part of the broad Pacific-North American transform plate boundary (Legg 1989).

Fault Rupture

All of the faults discussed above have the potential to generate strong seismic shaking at the project site. However, none have the potential to cause fault offset of the ground surface at the project site.

The Alquist-Priolo Earthquake Fault Zoning Act of 1994 (formerly known as the Alquist-Priolo Special Studies Zone Act of 1972) stipulates that no structure for human occupancy may be built within an Earthquake Fault Zone until geologic investigations demonstrate that the site is free of fault traces that are likely to rupture with surface displacement. Earthquake Fault Zones include faults considered to have been active during Holocene time and to have a relatively high potential for surface rupture (CGS 2008). An Earthquake Fault Zone has not been mapped on the project site.

Fault rupture almost always follows pre-existing faults, which are zones of weakness (CGS 2007). No active faults are shown on published maps as crossing the boundary of new construction on the proposed HBEP power plant site or associated linear facilities. Therefore, it is highly unlikely that the site would experience surface fault rupture during the project's design life.

Seismic Shaking

Preliminary estimates of ground motion based on probabilistic seismic hazard analyses have been calculated for the project site using the USGS Earthquake Hazards application called the U.S. Seismic "DesignMaps" Web Application (**Geology and Paleontology Table 2**). This application produces seismic hazard curves, uniform hazard response spectra, and seismic design values. The values provided by this application are based upon data from the 2008 USGS National Seismic Hazard Mapping Project. These design parameters are for use with the 2012 International Building Code, the 2010 ASCE-7 Standard, the 2009 NEHRP Provisions, and their respective predecessors.

These parameters are project-specific and, based on HBEP's location, were calculated using latitude and longitude inputs of 33.644 degrees north and 117.977 degrees west, respectively. Other inputs for this application are the site "type" which is based on the underlying geologic materials and the "Structure Risk Category". The assumed site class for HBEP is "E", which is applicable to soft clay soil. These parameters can be updated as appropriate following the results presented in a project-specific geotechnical investigation report performed for the site. The assumed "Structure Risk Category" is "III", which is based on its inherent risk to people and the need for the structure to function following a damaging event. Risk categories range from I (non essential) to IV (critical). Examples of risk category I include agriculture facilities, minor storage facilities, etc., while examples of category IV include fire stations, hospitals, nuclear power facilities, etc.

The ground acceleration values presented are typical for the area. Other developments in the adjacent area will also be designed to accommodate strong seismic shaking. The potential for and mitigation of the effects of strong seismic shaking during an earthquake should be addressed in a project-specific geotechnical report, per CBC 2010 requirements, and proposed Condition of Certification **GEO-1** and Conditions of Certification **Facility Design GEN-1**, **GEN-5** and **CIVIL-1**. Compliance with these conditions of certification would ensure the project is built to current seismic standards and potential impacts would be mitigated to insignificant levels in accordance with current standards of engineering practice.

Liquefaction

Liquefaction is the phenomenon in which uniformly sized, loosely deposited, saturated, granular soils with low clay contents undergo rapid loss of shear strength through the development of excess pore pressure during strong earthquake induced groundshaking of sufficient duration to cause the soil to behave as a fluid for a short period of time. Liquefaction generally occurs in saturated or near-saturated cohesionless soils at depths shallower than 50 feet below the ground surface. If the liquefying layer is near the surface, the effect for any structure supported on it is much like that of quicksand, resulting in sinking or tilting. If the layer is deeper in the subsurface, it can provide a sliding surface for materials above it, resulting in lateral motion (spreading or lurching) toward any nearby 'free face' (shore bluff, river embankment, excavation wall (PBS&J 2009).

The proposed project site is mapped in a Liquefaction Investigation Zone on the State of California Seismic Hazard Zone Map for the Newport Beach Quadrangles (CGS 1997). A Liquefaction Investigation Zone is an area "where historic occurrence of liquefaction, or local geological, geotechnical and groundwater conditions indicate a potential for permanent ground displacement such that mitigation as defined in Public Resources Codes Section 2693(c) [Seismic Hazards Mapping Act] would be required" (CGS 1997). The City of Huntington Beach has mapped the project site area having a "High to Very High" Liquefaction Potential (PBS&J 2009).

Geology and Paleontology Table 2
Planning Level 2010 CBC Seismic Design Parameters Maximum Considered Earthquake, ASCE 7 Standard

Parameter	Value
Assumed Site Class	E
Structure Risk Category	III - Substantial
SS – Mapped Spectral Acceleration, Short (0.2 Second) Period	1.612 g
S1 – Mapped Spectral Acceleration, Long (1.0 Second) Period	0.598 g
Fa – Site Coefficient, Short (0.2 Second) Period	0.900
Fv – Site Coefficient, Long (1.0 Second) Period	2.400
SDS – Design Spectral Response Acceleration, Short (0.2 Second) Period	0.967 g
SD1 – Design Spectral Response Acceleration, Long (1.0 Second) Period	0.958 g
SMS – Spectral Response Acceleration, Short (0.2 Second) Period	1.451 g
SM1 – Spectral Response Acceleration, Long (1.0 Second) Period	1.436 g

ASCE = American Society of Civil Engineers
Values from USGS 2010b

Groundwater was measured in geotechnical borings at a depth of approximately 14 feet below ground surface (Ninyo 2011). Ninyo and Moore stated that the measured groundwater depth is likely not representative of stabilized conditions. In the Seismic Hazard Zone Report for the Anaheim and Newport Beach 7.5 minute quadrangles, the California Division of Mines and Geology reported groundwater at the site to occur at a depth of 3 feet below ground surface (CDMG 1997). The CDMG study was based on older topographic maps and they did not take into account the elevation of filled areas. Based on the grading plan provided in the AFC (HBEP 2012a), the existing site surface is approximately 8 feet above the natural ground surface. This configuration would suggest that the water level measured in the geotechnical borings would be at a depth approximately 6 feet below the natural ground surface. Both of these determinations indicate that groundwater is shallow at the site and surrounding vicinity. The presence of shallow groundwater raises concerns about liquefaction potential, settlement rates, and the possible need for construction dewatering.

Based on site observations and review of information presented in the preliminary geotechnical report (Ninyo 2011), subsurface conditions at the site are likely to be conducive to liquefaction. Groundwater levels should be confirmed and the liquefaction potential on the proposed HBEP site should be addressed in a project-specific geotechnical report, per CBC 2010 requirements and proposed Condition of Certification **GEO-1**, and Conditions of Certification **Facility Design GEN-1**, **GEN-5** and **CIVIL-1**.

Lateral Spreading

Lateral spreading of the ground surface during an earthquake usually takes place along weak shear zones that have formed within a liquefiable soil layer. Lateral spreading generally takes place in the direction of a free-face (i.e., retaining wall, slope, channel). An empirical model is typically used to predict the amount of horizontal ground displacement within a site (Ninyo 2011). For sites located in proximity to a free-face, the amount of lateral ground displacement is strongly correlated with the distance of the site from the free-face. Other factors such as earthquake magnitude, distance from the earthquake epicenter, thickness of the liquefiable layers, and the fines content and particle sizes of the liquefiable layers also affect the amount of lateral ground displacement.

The project site includes free-face slopes along the Huntington Beach Channel on the north and east sides of the site. However, based on analysis of the sampler blow counts and generally discontinuous nature of the underlying soil layers encountered during the preliminary geotechnical evaluation, the project site is not considered susceptible to significant seismically induced lateral spread (Ninyo 2011). However, the susceptibility of the underlying beds to lateral spread beneath the proposed HBEP site should be addressed in a project-specific geotechnical report, per CBC 2010 requirements and proposed Condition of Certification **GEO-1** and Conditions of Certification **Facility Design GEN-1, GEN-5** and **CIVIL-1**.

Dynamic Compaction

Dynamic compaction of soils results when relatively unconsolidated granular materials experience vibration associated with seismic events. The vibration causes a decrease in soil volume, as the soil grains tend to rearrange into a more dense state (an increase in soil density). The decrease in volume can result in settlement of overlying structural improvements.

In order to estimate the amount of post-earthquake settlement of site soils, Ninyo & Moore used seismically induced cyclic stress ratios and corrected blow counts (N-values) to calculate the potential volumetric strain of the soil (Ninyo 2011). Their analysis indicated that seismically induced settlement at the project site would be approximately 1¼ inch or less.

The potential for and mitigation of the effects of dynamic compaction of proposed site soils during an earthquake should be addressed in a project-specific geotechnical report, per CBC 2010 requirements and proposed Conditions of Certification **GEO-1**, and Conditions of Certification **Facility Design GEN-1**, **GEN-5** and **CIVIL-1**. Common mitigation methods would include deep foundations (driven piles; drilled shafts) for severe conditions, geogrid reinforced fill pads for moderate severity and over-excavation and replacement for areas of minimal hazard.

Hydrocompaction

Hydrocompaction (also known as hydro-collapse) is generally limited to young soils that were deposited rapidly in a saturated state, most commonly by a flash flood. The soils dry quickly, leaving an unconsolidated, low density deposit with a high percentage of voids. Foundations built on these types of compressible materials can settle excessively, particularly when landscaping irrigation dissolves the weak cementation that is preventing the immediate collapse of the soil structure. As stated in the preliminary geotechnical report, “Due to the high groundwater levels encountered at the site and the reported historically high groundwater, it is our opinion that the site soils are not susceptible to hydro-collapse” (Ninyo 20011). The potential for and mitigation of the effects of hydrocompaction of site soils should be addressed in a project-specific geotechnical report, per CBC 2010 requirements and proposed Conditions of

Certification **GEO-1**, and Conditions of Certification **Facility Design GEN-1**, **GEN-5** and **CIVIL-1**. Typical mitigation measures would include over-excavation/replacement, mat foundations or deep foundations, depending on severity and foundation loads.

Compressible Soils

Compressible soils are generally those soils that undergo consolidation when exposed to new loading, such as fill placement or building construction. Buildings, structures and other improvements may be subject to excessive settlement-related distress when built above compressible soils. Settlement of sufficient magnitude to cause significant structural damage is normally associated with rapidly deposited alluvial soils.

Based on the results of the preliminary geotechnical evaluation, the project site was determined to be underlain by fill soils and young native alluvial sediments. The fill soils were considered potentially compressible (Ninyo 2011). In addition, native soils encountered in the borings contained interbeds of very soft silty clay alluvial/estuarine soil layers which were considered potentially compressible (Ninyo 2011). Due to the presence of potentially compressible soils at the site, the potential impacts of settlement could be significant without appropriate mitigation during detailed project design and construction.

The potential for and mitigation of the effects of consolidation of site soils should be addressed in a project-specific geotechnical report, per CBC 2010 requirements and proposed Condition of Certification **GEO-1**, and Conditions of Certification **Facility Design GEN-1**, **GEN-5** and **CIVIL-1**. Typical mitigation measures would include over-excavation/replacement, mat foundations or deep foundations, depending on severity and foundation loads.

Expansive Soils

Soil expansion occurs when clay-rich soils with an affinity for water exist in-place at a moisture content below their plastic limit. The addition of moisture from irrigation, precipitation, capillary tension, water line breaks, etc. causes the clay soils to absorb water molecules into their structure, which in turn causes an increase in the overall volume of the soil. This increase in volume can correspond to excessive movement (heave) of overlying structural improvements. The potential for and mitigation of the effects of expansive soils on the proposed site should be addressed in a project-specific geotechnical report, per CBC 2010 requirements and proposed Conditions of Certification **GEO-1**, and Conditions of Certification **Facility Design GEN-1**, **GEN-5** and **CIVIL-1**. Mitigation would normally be accomplished by over-excavation and replacement of the expansive soils. For deep-seated conditions, deep foundations are commonly used. Lime-treated (chemical modification) is often used to mitigate expansive clays in pavement areas.

Corrosive Soils

The project site is located in a geologic environment that could potentially contain soils that are corrosive to concrete and metals. Corrosive soils are defined as having earth materials with more than 500 ppm chlorides, a sulfate concentration of 0.20 percent (i.e., 2,000 ppm) or more, a pH of less than 5.5, or an electrical resistivity of less than 1,000 ohm-centimeters (Ninyo 2011).

As part of the preliminary geotechnical evaluation, the corrosion potential of on-site soil was evaluated for its effect on steel and concrete structural members (Ninyo 2011). Laboratory testing was performed on a representative soil sample to evaluate pH, minimum electrical resistivity, and chloride and soluble sulfate content. Based on the laboratory test results, Ninyo & Moore classified site soils as corrosive (Ninyo 2011).

Corrosive soil conditions may exacerbate the corrosion hazard to buried conduits, foundations, and other buried concrete or metal improvements. Corrosive soil could cause premature deterioration of underground structures or foundations. Constructing project improvements on corrosive soils could have a significant impact to the project.

The potential for and mitigation of the effects of corrosive soils on the proposed site should be addressed in a project-specific geotechnical report, per CBC 2010 requirements and proposed Conditions of Certification **GEO-1**, and Conditions of Certification **Facility Design GEN-1**, **GEN-5** and **CIVIL-1**. Mitigation of corrosive soil conditions may involve the use of concrete resistant to sulfate exposure. Corrosion protection for metals may be needed for underground foundations or structures in areas where corrosive groundwater or soil could potentially cause deterioration. Typical mitigation techniques include epoxy and metallic protective coatings, the use of alternative (corrosion resistant) materials, and selection of the appropriate type of cement and water/cement ratio.

Methane Gas

As presented in the applicant’s preliminary environmental assessment (HBEP 2012a), one plugged oil and gas well is located on the southwest portion of the site between HBGS Units 1 and 2 and the retention ponds. Several wells were identified off site, including two plugged, oil and gas wells located just east of the North and East fuel oil storage tanks to the north of the project. An abandoned dry hole is also present off site just north of the North fuel oil storage tank. The presence of an oil well on the site and several additional wells in the site vicinity represent a *Recognized Environmental Condition* in connection with the site (HBEP 2012a). Huntington Beach Municipal Code Section 17.04.085, Methane District Regulations, requires inspection and, if necessary, mitigation of abandoned oil wells and oil contaminated soil for projects within the City of Huntington Beach (Huntington 2010b).

As indicated in the Environmental Hazards Element of the City of Huntington Beach General Plan, the site is located within an area designated as a Methane Overlay District (Huntington 2010b). Projects proposed for construction in a Methane Overlay District must abide by Methane District Building Permit Requirements as described in City Specification No 429, incorporated within Huntington Beach Municipal Code Section 17.04.085.

The potential for and mitigation of the presence of methane gas beneath the proposed site should be addressed in accordance with City Specification No. 429 and proposed Conditions of Certification **GEO-2**. Mitigation of methane gas in subsurface soils typically includes installation of barriers or some form of venting system.

Landslides

Landslides occur when masses of rock, earth, or debris move down a slope, including rock falls, deep failure of slopes, and shallow debris flows. Landslides are influenced by human activity (mining and construction of buildings, railroads, and highways) and natural factors (geology, precipitation, and topography). Frequently, they accompany other natural hazards. Although landslides sometimes occur during earthquake activity, earthquakes are rarely their primary cause.

The most common cause of a landslide is an increase in the down slope gravitational stress applied to slope materials (oversteepening). This may be produced either by natural processes or human activities. Undercutting of a valley wall by stream erosion is a common way in which slopes may be naturally oversteepened. Other ways include excessive rainfall or irrigation on a cliff or slope.

The site is relatively flat and located substantial distances from steep terrain. Therefore, the site is not subject to landslide hazards.

Tsunamis and Seiches

Tsunamis are large-scale seismic-sea waves caused by offshore earthquakes, submarine landslides and/or volcanic activity. Seiches are waves generated within enclosed water bodies such as bays, lakes or reservoirs caused by seismic shaking, rapid tectonic uplift, basin bottom displacement and/or land sliding.

A tsunami can be categorized as local, regional, or Pacific-wide. Those terms describe the potential destruction relative to the tsunami source area.

Local (near-source) tsunamis occur soon after the generating event and allow little time for warning and evacuations. Their impact may be large, but in a limited area. For example, in 1958, waves from a local tsunami in Lituya, Alaska ran up 485 meters, but destruction was focused on a small area.

Regional (intermediate) tsunamis are by far the most common. Destruction may be limited because the energy released was not sufficient to generate a destructive Pacific-wide tsunami, or because the source area limited the destructive potential of the tsunami. These events can occur within 15 minutes to 2 hours after the generating event. Areas affected by the tsunamis may not have felt the generating event.

Pacific-wide (distant source) tsunamis are much less frequent, but have a far greater destructive potential. The waves are not only larger initially, but they subject distant coastal areas to their destructive impact as they cross the Pacific basin. For example, the Chilean tsunami of May 22, 1960, spread death and destruction across the Pacific from Chile to Hawaii, Japan, and the Philippines. These events may have long lead times (up to 6 hours), but the breadth of the destruction is wide (OES 1998).

All of California is at risk from both local and distant tsunamis (SSC 2005). Eighty-two possible or confirmed tsunamis have been observed or recorded in California during historic times. Most of these events were small and only detected by tide gages. Eleven were large enough to cause damage and four events caused deaths (SSC 2005). Two tsunami events caused major damage.

Tsunamis that damaged California's coast have come from all around the Pacific basin including South America and Alaska. However, damaging tsunamis can also be caused by local offshore faults or coastal and submarine landslides. These local sources have the potential to cause locally greater wave heights and do pose a threat to the state. The largest historic local-source tsunami on the west coast was caused by the 1927 Point Arguello, California, earthquake that produced waves of about 7 feet in the nearby coastal area (SSC 2005).

Studies have been conducted to evaluate the potential generation of tsunamis from earthquakes originating in the inner Continental Borderland (Legg 2002). These studies indicate that the Catalina fault is the most likely source of local tsunami generation. The Catalina fault is the northern continuation of the San Diego Trough fault zone discussed above (Ryan 2012). Near Catalina, the fault changes orientation to a more westerly trend forming a restraining bend. At this bend, crustal compression occurs and subsequent deformation creates up lift. Depending on the amount of underwater crustal uplift that takes place, a tsunami could be generated. Additionally, amplification of the wave form can occur due to ocean floor bathymetry causing wave refraction and constructive interference or wave amplification (Legg 2002). Areas considered susceptible to tsunami wave amplification include the coast from Los Angeles and Long Beach harbors to Newport Beach. Legg further states "*proximity to the coastal zone of urban Los Angeles and Orange Counties, orientation so as to direct tsunami energy towards the southern California coast and size of seafloor uplift (exceeding 1,300 square kilometers and almost 2,000 meters of seafloor relief) suggests that the Santa Catalina Island restraining bend represents the most serious local tsunami threat to coastal southern California*" (Legg 2002). Based on detailed earthquake modeling using variable earthquake scenarios, Legg determined the maximum runup of a tsunami in the project area caused by an earthquake on the Catalina Island restraining bend would have a height between 1.5 to 2.2 meters (5 to 7.2 feet) (Legg 2002).

In addition to tsunamis generated by earthquake rupture of the seafloor, the possibility that major tsunamis could be generated by massive submarine slumps was recognized a century ago (Synolakis 2002). In more recent years, a variety of studies has supported the scenario of the generation of a major tsunami by a large submarine mass failure, itself induced or triggered by a large earthquake in a coastal area. In addition to the classical documented cases of Grand Banks in 1929, Kalapana, Hawaii in 1975 and the ongoing speculation about the great 1946 Aleutian tsunami, careful analyses of run-up patterns along shorelines often reveal a peaked distribution, with very intense and localized maxima, generally attributed to a local submarine mass failure, against the background of a more regular wave amplitude reflecting the coseismic dislocation (Synolakis 2002). This would be the case, in particular, for localities in Prince William Sound during the great 1964 Alaska earthquake, at Riangkroko during the 1992 Flores, Indonesia event, and during the recent Izmit, Turkey earthquake (Yal¸ciner *et al* .1999). This scenario can also explain minor tsunamis during strike–slip earthquakes on nearby on-land faults, for example, following the 1989 Loma Prieta earthquake (Ma *et al* .1991). It is clear that the exact timing of failure in this framework is variable, but delays of a few minutes to a few tens of minutes could easily be attributed to the complex nucleation of a failure plane in metastable sediment, or to a mild secondary trigger (aftershock) tipping a precarious balance (Murty 1979).

Characteristics of tsunamis generated by the two kinds of sources can be compared in very general terms by considering the vertical deformation of the sea floor caused by either event. Catastrophic earthquakes can result in coherent surface rupture over long distances (Kanamori 1975) with vertical displacement usually reaching several meters (Plafker 1965). Tsunamis generated by seafloor displacement caused by earthquakes typically have long wavelengths and long periods and have a high potential for transoceanic travel and subsequent impact to distant shores. Conversely, the linear dimension of an underwater landslide rarely exceeds 100 km (Piper 1987). However, the areal dimension of the sliding mass could easily reach hundreds of square meters (Piper 1987. Tsunamis caused by submarine mass failures are more geographically contained, although they may give rise to higher amplitudes in the local field (Plafker 1969).

Current research has demonstrated that modeling of landslide tsunami hazards requires information and data from seismology, marine geology, geotechnical engineering and hydrodynamics (Bardet 2003). The outcomes of hydrodynamic simulations were found to depend largely on the assumptions made on the geological and geotechnical processes governing mass failures. These discoveries raised fundamental issues in the modeling of tsunamis, especially about the prediction of future mass failure events.

Thirty years of surveys have shown that the slopes of the southern California Borderland contain a large number of landslide deposits (Lee 2009). The submarine landslide most likely to affect the HBEP site is the Palos Verdes debris avalanche. The Palos Verdes debris avalanche occurs on one of the steepest slopes in the Los Angeles offshore region (Lee 2000). Should it catastrophically reactivate, the Palos Verdes debris avalanche would likely cause a tsunami run-up of up to 3 meters (10 feet) over a 30 kilometer (18 mile) long stretch of low-lying coastline extending eastward from the entrance of Los Angeles harbor (Lee 2009).

The California Geological Survey has published tsunami inundation maps for the entire California coastline (CGS 2009). Initial tsunami modeling was performed by the University of Southern California (USC) Tsunami Research Center funded through the California Emergency Management Agency (CalEMA) by the National Tsunami Hazard Mitigation Program. A suite of tsunami source events was selected for modeling, representing realistic local and distant earthquakes and hypothetical extreme undersea, near-shore landslides. Local tsunami sources that were considered include offshore reverse-thrust faults, restraining bends on strike-slip fault zones and large submarine landslides capable of significant seafloor displacement and tsunami generation. Distant tsunami sources that were considered include great subduction zone events that are known to have occurred historically (1960 Chile and 1964 Alaska earthquakes) and others which can occur around the Pacific Ocean “Ring of Fire”.

As a disclaimer, the map states that it is not a legal document and does not meet disclosure requirements for real estate transactions nor for any other regulatory purpose (CGS 2009). However, the inundation map has been compiled with best currently available scientific information. The inundation line represents the maximum considered tsunami run-up from a number of extreme, yet realistic, tsunami sources. The map indicates that the areas in the site vicinity that are situated at elevations less than 7 feet above sea level could be inundated by a tsunami (**Geology and Paleontology - Figure 12**).

Based on modeling a dozen distant and local “worst case” sources, and modeling at MHW (Mean High Water) conditions, CGS determined that the maximum flood elevations from the modeling in the area of the project are about 11 feet above MSL (Mean Sea Level). The two sources that could produce this maximum flood level are a magnitude 7.6 earthquake from the Catalina 7 local scenario and a magnitude 9.2 earthquake from the Alaska-Aleutians 3 scenario. The beach heights in the project area are very close to 11 feet MSL. However, tsunami flooding could also come from behind the beach through the drainage channel outfall and potentially overtop the flood control levees. Again, the worst-case scenario is that tsunami flood elevations could reach 11 feet MSL near the site but it would take quite large events to produce such flooding (Rick Wilson, CGS California Tsunami Preparedness and Hazard Mitigation Program, personal communication, 2013). Therefore, it is unlikely that the project would be affected by tsunami during its design life.

U.S. Building codes generally have not addressed the subject of designing structures in tsunami zones. FEMA’s Coastal Construction Manual (FEMA 55), developed to provide design and construction guidance for residential structures built in coastal areas, addresses seismic loads for coastal structures and provides information on tsunami and associated loads (SSC 2005). FEMA 55 cites ASCE Standard ASCE 7-10, *Minimum Design Loads for Buildings and Other Structures* as the reference to be consulted during design of structures. ASCE 7-10 is codified in CBC 2010.

A seiche is a standing wave in an enclosed or partially enclosed body of water. The effect is caused by resonances in a body of water that has been disturbed by one or more of a number of factors, most often meteorological effects (wind and atmospheric pressure variations), seismic activity or by tsunamis. Seiches and seiche-related phenomena have been observed on lakes, reservoirs, swimming pools, bays, harbors and seas. The key requirement for formation of a seiche is that the body of water be at least partially bounded, allowing the formation of the standing wave. The only nearby enclosed bodies of water that could potentially develop a seiche is the Huntington Beach Channel and the Magnolia Marsh Ecological Preserve. Given the improbable development of a seiche wave in either of these bodies of water, the magnitude of a seiche impacting the project site is anticipated to be lower than that of a tsunami. The elevated surface of the project site would isolate the project from any perceived inundation and the likelihood of a seiche or a tsunami impacting the site is considered low.

The potential for and mitigation of the effects of tsunami or seiche caused inundation on the proposed site should be addressed in a project-specific geotechnical report, per CBC 2010 requirements and proposed Conditions of Certification **GEO-1**, and Conditions of Certification **Facility Design GEN-1**, **GEN-5** and **CIVIL-1**. Mitigation of tsunami run-up hazards includes structural and civil engineering evaluation, strengthening of seafront structures and providing emergency warning systems. Structural reinforcement at the site can be included for tsunami protection, as deemed appropriate at the detailed design stage by the project structural engineer.

OPERATION IMPACTS AND MITIGATION

Operation of the proposed plant facilities should not have any adverse impact on geologic, mineralogic, or paleontologic resources. Once the plant is constructed and operating, there would be no further disturbances that could affect these resources. Potential geologic hazards, including strong ground shaking, ground subsidence, liquefaction, settlement due to compressible soils, hydrocompaction, or dynamic compaction, corrosive soils and the possible presence of expansive clay soils can be effectively mitigated through facility design such that these potential hazards should not affect future operation of the facility. Compliance with Condition of Certification **GEO-1**, and Conditions of Certification **GEN-1, GEN-5** and **CIVIL-1** in the **Facility Design** section would ensure the project is constructed to current seismic building standards and potential impacts would be mitigated in accordance with current standards of engineering practice.

CUMULATIVE IMPACTS AND MITIGATION

No geologic and mineralogic resources have been identified in the project area. The site has not been identified as containing a significant mineral deposit that should be protected. Development of this project is not expected to lead to a significantly cumulative effect on geologic and mineralogic resources within the project area.

Paleontological resources have been documented in the general area of the proposed project but not in sediments which could be encountered beneath the site. If significant paleontological resources are uncovered during construction, they would be protected and preserved in accordance with Conditions of Certification **PAL-1** to **PAL-7**. These conditions would also mitigate any potential cumulative impacts.

The proposed HBEP would be situated in an active geologic environment. Strong ground shaking potential must be mitigated through foundation and structural design as required by the CBC 2010. The potential for lateral spreading and liquefaction must be addressed and mitigated through appropriate facility design. Compressible soils and soils that may be subject to settlement due to dynamic compaction, must be addressed and mitigated in accordance with a design-level geotechnical investigation as required by the CBC 2010, and proposed Conditions of Certification **GEO-1**, and Conditions of Certification **Facility Design GEN-1**, **GEN-5** and **CIVIL-1.**

FACILITY CLOSURE

Future facility closure activities would not be expected to impact geologic or mineralogic resources since no such resources are known to exist at either the project location or along its proposed linears. In addition, the decommissioning and closure of the proposed project should not negatively affect geologic, mineralogic, or paleontologic resources since the majority of the ground disturbed during plant decommissioning and closure would have been already disturbed, and mitigated as required, during construction and operation of the project.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

The California Coastal Commission (Luster 2013) provided preliminary comments regarding geologic hazards as they may affect the site. The Coastal Commission's comments with the Energy Commission responses are provided below:

- Comment

  The "*site is subject to several severe geologic hazards".*

  Response

  True, however, the site is not subject to any geologic hazards that are any more significant than those shared by all adjacent properties/developments. Staff has also recommended the applicant be required to comply with CBC 2010 which would ensure the facility is designed and constructed in accordance with the industry standards to resist effects of geologic hazards.

- Comment

  Site's location is adjacent to an earthquake fault.

  Response

  As stated in the analysis above, an inferred concealed fault is located approximately 1,000 feet east of the project site. There is no indication that the concealed fault is active. The closest active fault is located approximately 1 ½ miles to the north of the site.

- Comment

  The site's susceptibility to relatively high expected ground motion (at or above 1 g).

  Response

  The site is susceptible to strong seismic shaking. The susceptibility to the proposed project is not any more than to which all developments in the area are exposed. The expected ground motion will be used in the structural design of the facility.

- Comment

  The site is susceptible to surface fault rupture.

  Response

  There are no known active faults beneath the site and the site is not considered susceptible to surface fault rupture.

- Comment

  The site is subject to liquefaction and lateral spreading.

  Response

  True. Staff has recommended the applicant be required to comply with CBC 2010 which would ensure the facility is designed and constructed in accordance with the industry standards to resist effects of these phenomena.

- Comment

  The site has been identified as being subject to moderate to very heavy damage from earthquakes.

  Response

  Staff believes the site could be subject to significant ground shaking from earthquakes. However, staff also concludes that potential “very heavy damage from earthquakes” can be mitigated with appropriate design and construction methods through compliance with CBC 2010.

- Comment

  The site is also within a tsunami run-up zone with expected run-up levels of about 16 feet.

  Response

  This statement is unsupported by currently available studies. The expected tsunami run-up is estimated between 5 and 9 feet above sea level and is mapped by the California Geological Survey as approaching 7 feet above sea level. If the modeled tsunami occurred at an abnormally high tide, run-up could approach an elevation of 11 feet above sea level.

- Comment

  The 16 feet of tsunami inundation is well above the foundation of the power plant.

  Response

  Based on the site grading plan, the ground surface in the eastern portion of the proposed plant will be more that 12 feet above sea level and the western portion more than 16 feet above sea level. Well “above” the expected run-up elevation of 7 feet above sea level.

- Comment

  Predicted sea level rise during the expected operating life will be 2 feet by 2050.

  Response

  Based on the sea level rise projections developed by the Sea-Level Rise Task Force of the Coastal and Ocean Working Group of the California Climate Action Team, sea level is predicted to raise a maximum of 17 inches above 2000 level by the year 2050 (OPC 2010).

CONCLUSIONS

The applicant would be able to comply with applicable LORS, provided that the proposed Conditions of Certification are followed. The proposed design and construction of the project should have no adverse impact with respect to geologic, mineralogic, and paleontologic resources. Staff proposes to ensure compliance with applicable LORS through the adoption of the proposed Conditions of Certification listed below.

PROPOSED CONDITIONS OF CERTIFICATION

General Conditions of Certification with respect to engineering geology are proposed under Conditions of Certification **GEN-1, GEN-5**, and **CIVIL-1** in the **Facility Design** section and in **GEO-1** and **GEO-2** of this section. Proposed paleontological Conditions of Certification follow in **PAL-1** through **PAL-8**. It is staff's opinion that the likelihood of encountering paleontologic resources could be high in areas where native Pleistocene age deposits occur. Staff would consider reducing monitoring intensity, at the recommendation of the project PRS, following examination of sufficient, representative excavations that fully describe site stratigraphy.

GEO-1 A Soils Engineering Report as required by Section 1803 of the California Building Code (CBC2010), shall specifically include laboratory test data, associated geotechnical engineering analyses, and a thorough discussion of seismicity; liquefaction; dynamic compaction; compressible soils; corrosive soils; and tsunami. In accordance with CBC 2010, the report should also include recommendations for ground improvement and/or foundation systems necessary to mitigate these potential geologic hazards, if present.

<u>Verification:</u> The project owner shall include in the application for a grading permit a copy of the Soils Engineering Report which addresses the potential for strong seismic shaking; liquefaction; dynamic compaction; settlement due to compressible soils; corrosive soils: and tsunami, and a summary of how the results of the analyses were incorporated into the project foundation and grading plan design for review and comment by the Chief Building Official (CBO). A copy of the Soils Engineering Report, application for grading permit and any comments by the CBO are to be provided to the CPM at least 30 days prior to grading.

GEO-2 The project owner shall provide a Methane District Building Permit as required by City Specification No. 429 of Huntington Beach Municipal Code Section 17.04.085 (Huntington 2010b). As required, the permit shall specifically include:

1) a site soil testing plan capable of detecting the presence of methane in the near surface soils,

2) field testing as specified in the approved plan,

3) laboratory test data,

4) pre-site disturbance mitigation if high concentrations of methane are discovered during testing,

5) site audits, and

6) area well documentation and review.

In accordance with the City Specification, the permit should also include designs for recommended methane control systems necessary to mitigate these potential hazards, if present.

<u>Verification:</u> The project owner shall include in the application for a Methane District Building Permit a copy of the construction project Site Plan Review approved by the California Department of Conservation Division of Oil, Gas and Geothermal Resources

(DOGGR) that is on file with the Huntington Beach Fire Department PetroChem section. A copy of the Site Plan Review, application for the Methane District Building Permit and any comments by Huntington Beach Fire Chief are to be provided to the CPM at least 30 days prior to initiation of grading.

PAL-1 The project owner shall provide the compliance project manager (CPM) with the resume and qualifications of its paleontological resource specialist (PRS) for review and approval. If the approved PRS is replaced prior to completion of project mitigation and submittal of the paleontological resources report (PRR), the project owner shall obtain CPM approval of the replacement PRS. The project owner shall keep resumes on file for qualified paleontological resources monitors (PRMs). If a PRM is replaced, the resume of the replacement PRM shall also be provided to the CPM for review and approval.

The PRS resume shall include the names and phone numbers of references. The resume shall also demonstrate to the satisfaction of the CPM the appropriate education and experience to accomplish the required paleontological resource tasks.

As determined by the CPM, the PRS shall meet the minimum qualifications for a vertebrate paleontologist as described in the Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources by the Society of Vertebrate Paleontology (SVP 2010). The experience of the PRS shall include the following:

1. Institutional affiliations, appropriate credentials, and college degree;
2. Ability to recognize and collect fossils in the field;
3. Local geological and biostratigraphic expertise;
4. Proficiency in identifying vertebrate and invertebrate fossils; and
5. At least three years of paleontological resource mitigation and field experience in California and at least one year of experience leading paleontological resource mitigation and field activities.

The project owner shall ensure that the PRS obtains qualified paleontological resource monitors to monitor as he or she deems necessary on the project. paleontologic resource monitors (PRMs) shall have the equivalent or combination of the following qualifications approved by the CPM:

- BS or BA degree in geology or paleontology and one year of experience monitoring in California; or
- AS or AA in geology, paleontology, or biology and four years' experience monitoring in California; or
- Enrollment in upper division classes pursuing a degree in the fields of geology or paleontology and two years of monitoring experience in California.

Verification:

(1) At least 60 days prior to the start of ground disturbance, the project owner shall submit a resume and statement of availability of its designated PRS for on-site work to the CPM, whose approval must be obtained.

(2) At least 20 days prior to ground disturbance, the PRS or project owner shall provide a letter with resumes naming anticipated monitors for the project. The letter shall state that the identified monitors meet the minimum qualifications for paleontological resource monitoring as required by this condition of certification. If additional monitors are obtained during the project, the PRS shall provide additional letters and resumes to the CPM. The letter shall be provided to the CPM for approval no later than one week prior to the monitor's beginning on-site duties.

(3) Prior to any change in the PRS, the project owner shall submit the resume of the proposed new PRS to the CPM for review and approval.

PAL-2 The project owner shall provide to the PRS and the CPM, for approval, maps and drawings showing the footprint of the power plant, construction lay down areas, and all related facilities. Maps shall identify all areas of the project where ground disturbance is anticipated. If the PRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the PRS and CPM. The site grading plan and the plan and profile drawings for the utility lines would be acceptable for this purpose. The plan drawings should show the location, depth, and extent of all ground disturbances and be at a scale between 1 inch = 40 feet and 1 inch = 100 feet. If the footprint of the project or its linear facilities change, the project owner shall provide maps and drawings reflecting those changes to the PRS and CPM.

If construction of the project proceeds in phases, maps and drawings may be submitted prior to the start of each phase. A letter identifying the proposed schedule of each project phase shall be provided to the PRS and CPM. Before work commences on affected phases, the project owner shall notify the PRS and CPM of any construction phase scheduling changes.

At a minimum, the project owner shall ensure that the PRS or PRM consults weekly with the project superintendent or construction field manager to confirm area(s) to be worked the following week, until ground disturbance is completed.

Verification:

(1) At least 30 days prior to the start of ground disturbance, the project owner shall provide the maps and drawings to the PRS and CPM.

(2) If there are changes to the footprint of the project, revised maps and drawings shall be provided to the PRS and CPM at least 15 days prior to the start of ground disturbance.

(3) If there are changes to the scheduling of the construction phases, the project owner shall submit a letter to the CPM within 5 days of identifying the changes.

PAL-3 The project owner shall ensure that the PRS prepares a Paleontological Resources Monitoring and Mitigation Plan (PRMMP) and submits the PRMMP to the CPM for review and approval. Approval of the PRMMP by the CPM shall occur prior to any ground disturbance. The PRMMP shall function as the formal guide for monitoring, collecting, and sampling activities, and may be modified with CPM approval. The PRMMP shall be used as the basis of discussion when on-site decisions or changes are proposed. Copies of the PRMMP shall include all updates and reside with the PRS, each monitor, the project owner's on-site manager, and the CPM.

The PRMMP shall be developed in accordance with the guidelines of the Society of Vertebrate Paleontology (SVP 2010) and shall include, but not be limited, to the following:

1. Assurance that the performance and sequence of project-related tasks, such as any literature searches, pre-construction surveys, worker environmental training, fieldwork, flagging or staking, construction monitoring, mapping and data recovery, fossil preparation and collection, identification and inventory, preparation of final reports, and transmittal of materials for curation will be performed according to PRMMP procedures;
2. Identification of the person(s) expected to assist with each of the tasks identified within the PRMMP and these conditions of certification;
3. A thorough discussion of the anticipated geologic units expected to be encountered, the location and depth of the units relative to the project when known, and the known sensitivity of those units based on the occurrence of fossils either in that unit or in correlative units;
4. An explanation of why sampling is needed, a description of the sampling methodology, and how much sampling is expected to take place in which geologic units. Include descriptions of different sampling procedures that shall be used for fine-grained and coarse-grained units;
5. A discussion of the locations of where the monitoring of project construction activities is deemed necessary, and a proposed plan for monitoring and sampling at these locations;
6. A discussion of procedures to be followed: (a)in the event of a significant fossil discovery, (b) stopping construction, (c) resuming construction, and (d) how notifications will be performed;
7. A discussion of equipment and supplies necessary for collection of fossil materials and any specialized equipment needed to prepare, remove, load, transport, and analyze large-sized fossils or extensive fossil deposits;
8. Procedures for inventory, preparation, and delivery for curation into a retrievable storage collection in a public repository or museum, which meet the Society of Vertebrate Paleontology's standards and requirements for the curation of paleontological resources;

9. Identification of the institution that has agreed to receive data and fossil materials collected, requirements or specifications for materials delivered for curation, and how they will be met, and the name and phone number of the contact person at the institution; and

10. A copy of the paleontological conditions of certification.

Verification: At least 30 days prior to ground disturbance, the project owner shall provide a copy of the PRMMP to the CPM. Approval of the PRMMP by the CPM shall occur prior to any ground disturbance. The PRMMP shall include an affidavit of authorship by the PRS, and acceptance of the PRMMP by the project owner evidenced by a signature.

PAL-4 Prior to ground disturbance the project owner and the PRS shall prepare a CPM-approved Worker Environmental Awareness Program (WEAP).

The WEAP shall address the possibility of encountering paleontological resources in the field, the sensitivity and importance of these resources, and legal obligations to preserve and protect those resources. The purpose of the WEAP is to train project workers to recognize paleontologic resources and identify procedures they should follow to ensure there are no impacts to sensitive paleontologic resources. The WEAP shall include:

1. A discussion of applicable laws and penalties under the law;
2. Good quality photographs or physical examples of vertebrate fossils for project sites containing units of high paleontologic sensitivity;
3. Information that the PRS or PRM has the authority to stop or redirect construction in the event of a discovery or unanticipated impact to a paleontological resource;
4. Instruction that employees are to stop or redirect work in the vicinity of a find and to contact their supervisor and the PRS or PRM;
5. An informational brochure that identifies reporting procedures in the event of a discovery;
6. A WEAP certification of completion form signed by each worker indicating that he/she has received the training; and
7. A sticker that shall be placed on hard hats indicating that environmental training has been completed.

The Project Owner shall also submit the training script and, if the project owner is planning to use a video for training, a copy of the training video with the set of reporting procedures for workers to follow that will be used to present the WEAP and qualify workers to conduct ground disturbing activities that could impact paleontologic resources.

Verification:

(1) At least 30 days prior to ground disturbance, the project owner shall submit to the CPM for review and comment the draft WEAP, including the brochure and sticker. The submittal shall also include a draft training script and, if the project owner is planning to

use a video for training, a copy of the training video with the set of reporting procedures for workers to follow.

(2) At least 15 days prior to ground disturbance, the project owner shall submit to the CPM for approval the final WEAP and training script.

PAL-5 No worker shall excavate or perform any ground disturbance activity prior to receiving CPM-approved WEAP training by the PRS, unless specifically approved by the CPM.

Prior to project kick-off and ground disturbance the following workers shall be WEAP trained by the PRS in-person: project managers, construction supervisors, foremen, and all general workers involved with or who operate ground-disturbing equipment or tools. Following project kick-off, a CPM-approved video or in-person training may be used for new employees. The training program may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or other areas of interest or concern. A WEAP certification of completion form shall be used to document who has received the required training.

<u>Verification:</u>

(1) In the Monthly Compliance Report (MCR), the project owner shall provide copies of the WEAP certification of completion forms with the names of those trained and the trainer or type of training (in-person and/or video) offered that month. The MCR shall also include a running total of all persons who have completed the training to date.

(2) If the project owner requests an alternate paleontological WEAP trainer, the resume and qualifications of the trainer shall be submitted to the CPM for review and approval prior to installation of an alternate trainer. Alternate trainers shall not conduct WEAP training prior to CPM authorization.

PAL-6 The project owner shall ensure that the PRS and PRM(s) monitor, consistent with the PRMMP, all construction-related grading, excavation, trenching, and augering in areas where potential fossil-bearing materials have been identified, both at the site and along any constructed linear facilities associated with the project. In the event that the PRS determines full-time monitoring is not necessary in locations that were identified as potentially fossil-bearing in the PRMMP, the project owner shall notify and seek the concurrence of the CPM.

The project owner shall ensure that the PRS and PRM(s) have the authority to stop or redirect construction if paleontological resources are encountered. The project owner shall ensure that there is no interference with monitoring activities unless directed by the PRS. Monitoring activities shall be conducted as follows:

1. Any change of monitoring from the accepted schedule in the PRMMP shall be proposed in a letter or email from the PRS and the project owner to the CPM prior to the change in monitoring and be included in the monthly compliance report. The letter or email shall include the justification for the

change in monitoring and be submitted to the CPM for review and approval.

2. The project owner shall ensure that the PRM(s) keep a daily monitoring log of paleontological resource activities. The PRS may informally discuss paleontological resource monitoring and mitigation activities with the CPM at any time.
3. The project owner shall ensure that the PRS notifies the CPM within 24 hours of the occurrence of any incidents of non-compliance with any paleontological resources conditions of certification. The PRS shall recommend corrective action to resolve the issues or achieve compliance with the conditions of certification.
4. For any significant paleontological resources encountered, either the project owner or the PRS shall notify the CPM within 24 hours, or Monday morning in the case of a weekend event, when construction has been stopped because of a paleontological find.

The project owner shall ensure that the PRS prepares a summary of monitoring and other paleontological activities that will be included in each MCR. The summary will include the name(s) of PRS or PRM(s) active during the month, general descriptions of training and monitored construction activities, and general locations of excavations, grading, and other activities. A section of the report shall include the geologic units or subunits encountered, descriptions of samplings within each unit, and a list of identified fossils. A final section of the report will address any issues or concerns about the project relating to paleontologic monitoring, including any incidents of non-compliance or any changes to the monitoring plan that have been approved by the CPM. If no monitoring took place during the month, the report shall include an explanation in the summary as to why monitoring was not conducted.

Verification: The project owner shall ensure that the PRS submits the summary of monitoring and paleontological activities in the MCR. When feasible, the CPM shall be notified 10 days in advance of any proposed changes in monitoring different from that identified in the PRMMP. If there is any unforeseen change in monitoring, the notice shall be given as soon as possible prior to implementation of the change.

PAL-7 The project owner shall ensure preparation of a Paleontological Resources Report (PRR) by the designated PRS. The PRR shall be prepared following completion of ground-disturbing activities. The PRR shall include an analysis of the collected fossil materials and related information, and shall be submitted to the CPM for approval.

The report shall include, but not be limited to, a description and inventory of recovered fossil materials; a map showing the location of paleontological resources encountered; and the PRS' description of sensitivity and significance of those resources.

Verification: Within 90 days after completion of ground-disturbing activities, including landscaping, the project owner shall submit the PRR under confidential cover to the CPM.

PAL-8 The project owner, through the designated PRS, shall ensure that all components of the PRMMP are adequately performed, including collection of fossil material, preparation of fossil material for analysis, analysis of fossils, identification and inventory of fossils, preparation of fossils for curation, and delivery for curation of all significant paleontological resource materials encountered and collected during project construction. The project owner shall pay all curation fees charged by the museum for fossil material collected and curated as a result of paleontological mitigation. The project owner shall also provide the curator with documentation showing the project owner irrevocably and unconditionally donates, gives, and assigns permanent, absolute, and unconditional ownership of the fossil material.

Verification: Within 60 days after the submittal of the PRR, the project owner shall submit documentation to the CPM showing fees have been paid for curation and the owner relinquishes control and ownership of all fossil material.

Certification of Completion
Worker Environmental Awareness Program
HUNTINGTON BEACH ENERGY PROJECT (12-AFC-02)

This is to certify these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on cultural, paleontological, and biological resources for all personnel (that is, construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
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Cultural Trainer: ______________ Signature: ______________________ Date: ___/___/____

PaleoTrainer: ________________ Signature: ______________________ Date: ___/___/____

Biological Trainer: ____________ Signature:______________________Date:___/___/____

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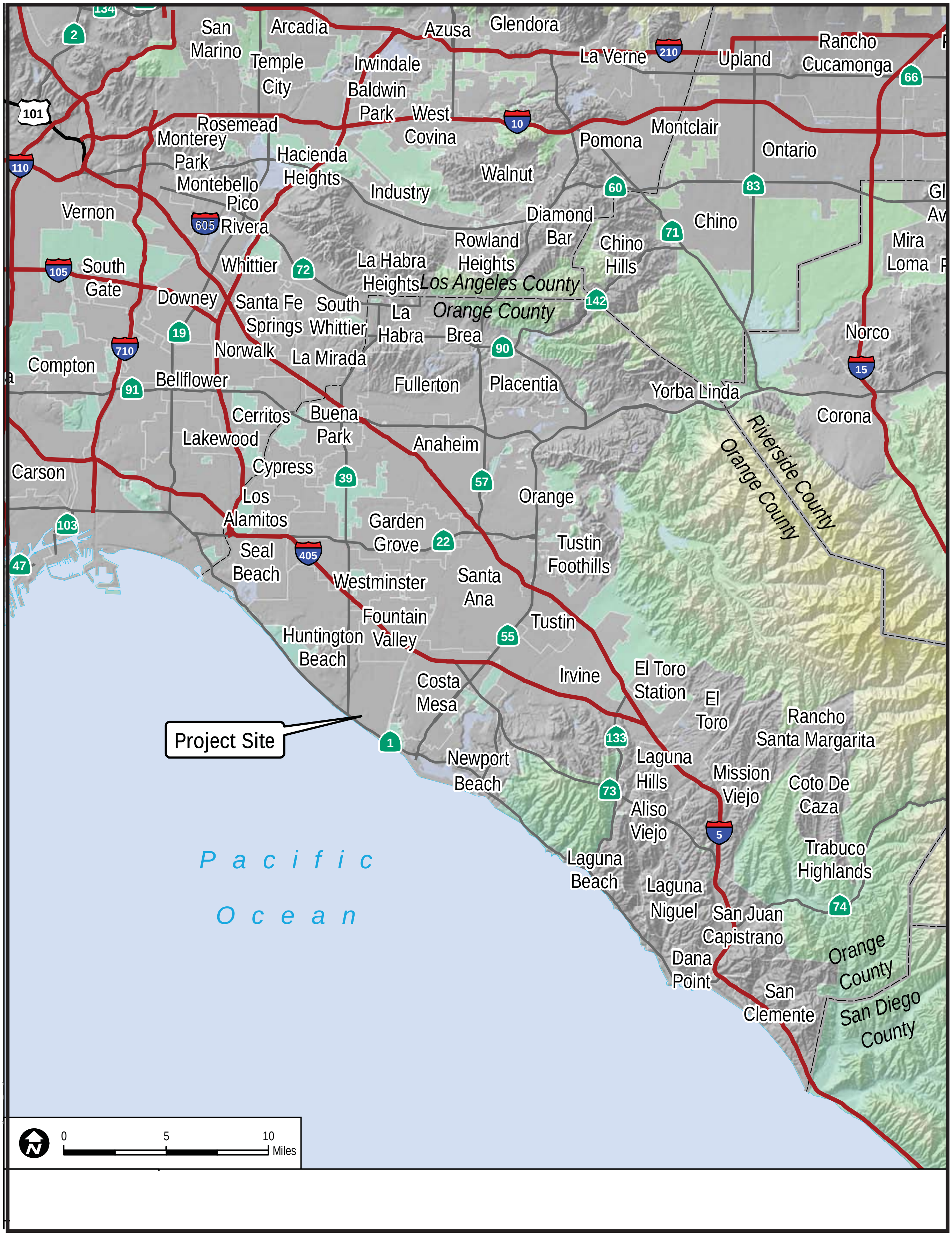
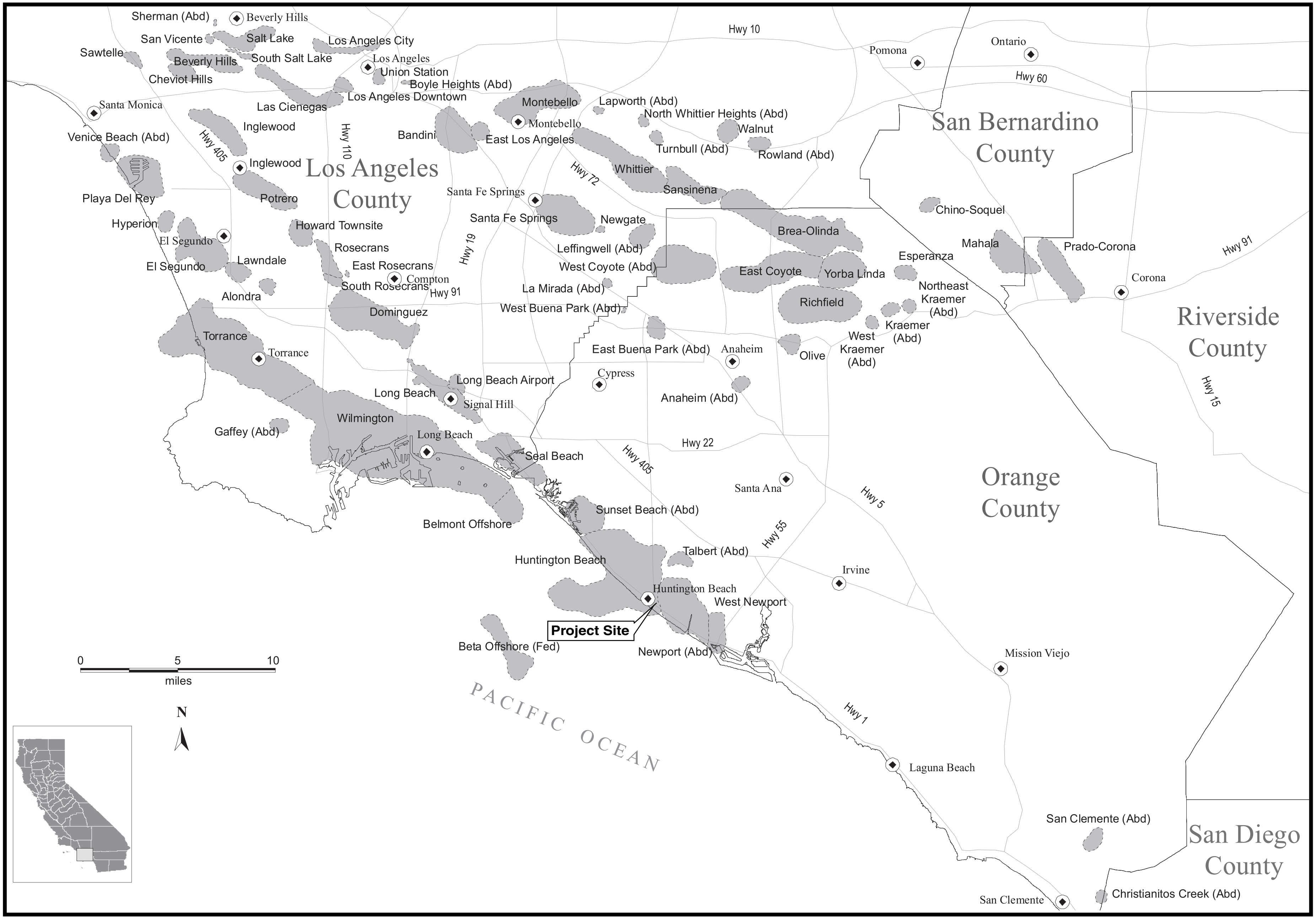
GEOLOGY AND PALEONTOLOGY - FIGURE 1
Huntington Beach Energy Project - Location Map



GEOLOGY AND PALEONTOLOGY - FIGURE 2

Huntington Beach Energy Project - Los Angeles Basin area oil fields

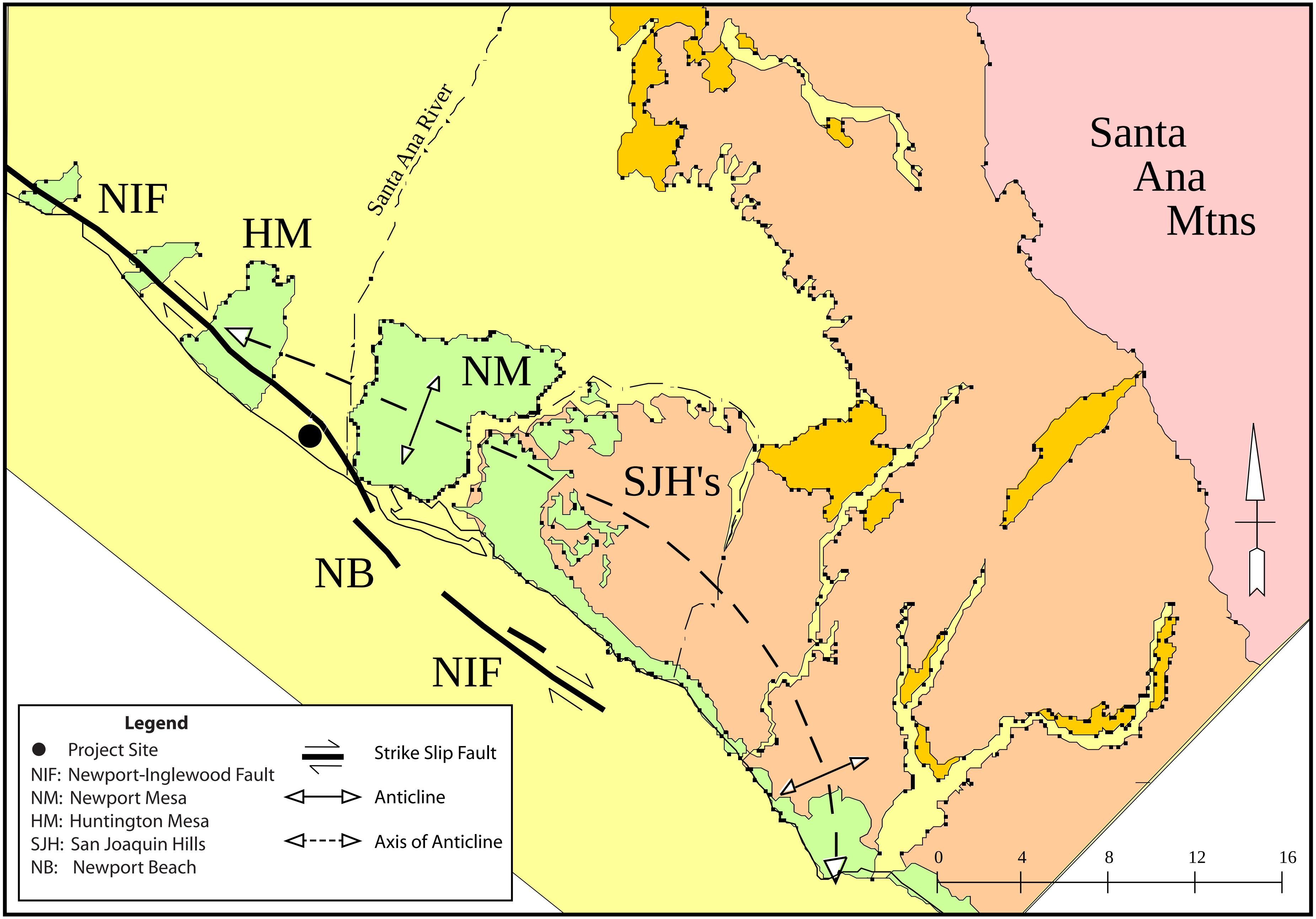


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Urban Development of Oil Fields in the Los Angeles Basin Area, 1983 to 2001 (Gamache 2003)

GEOLOGY AND PALEONTOLOGY - FIGURE 3

Huntington Beach Energy Project - San Joaquin Hills Anticline



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: (Muller 1998)

GEOLOGY AND PALEONTOLOGY - FIGURE 4

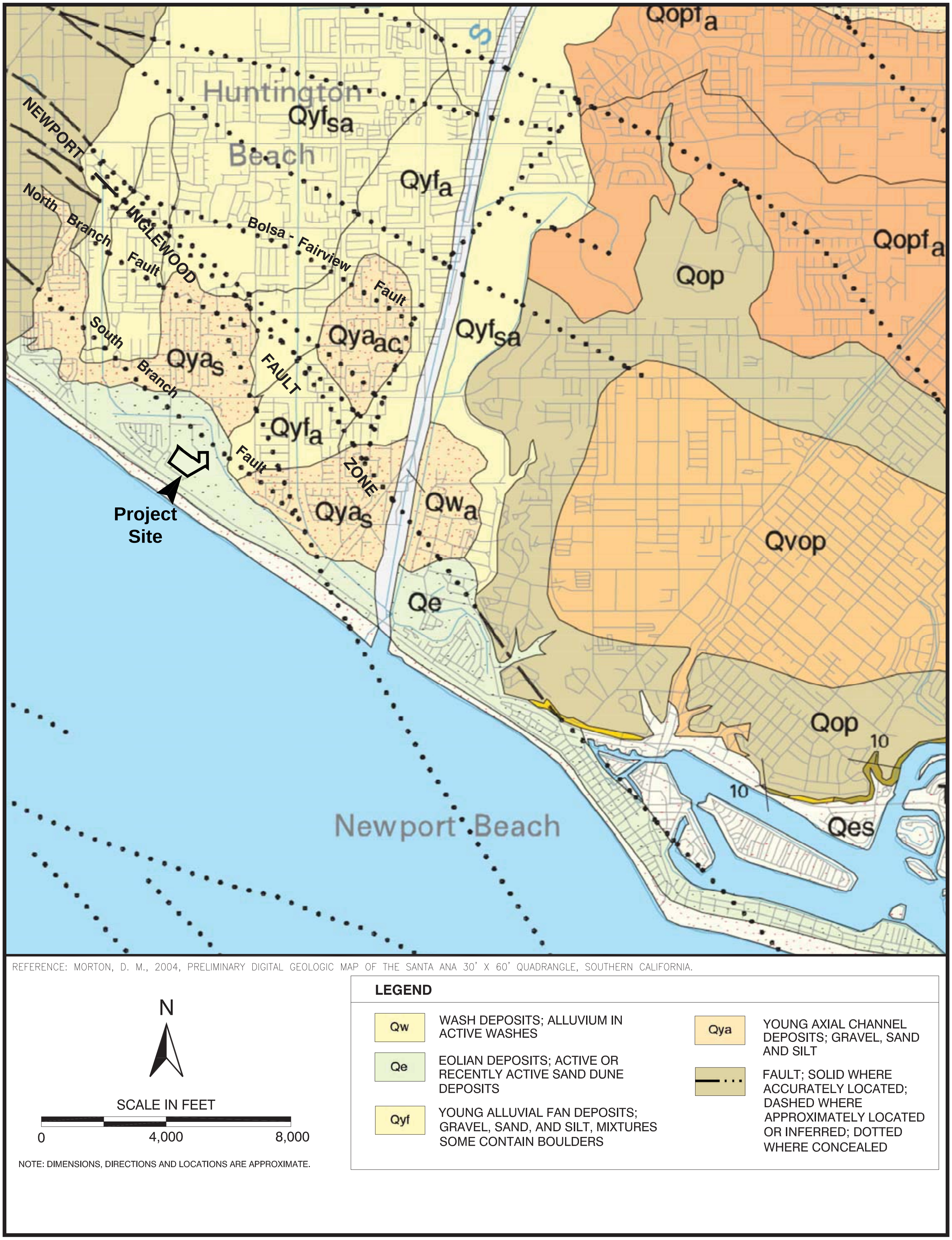
Huntington Beach Energy Project - Site Map

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Section 5.7, Figure 5.7-1

GEOLOGY AND PALEONTOLOGY - FIGURE 5

Huntington Beach Energy Project - Regional Geology

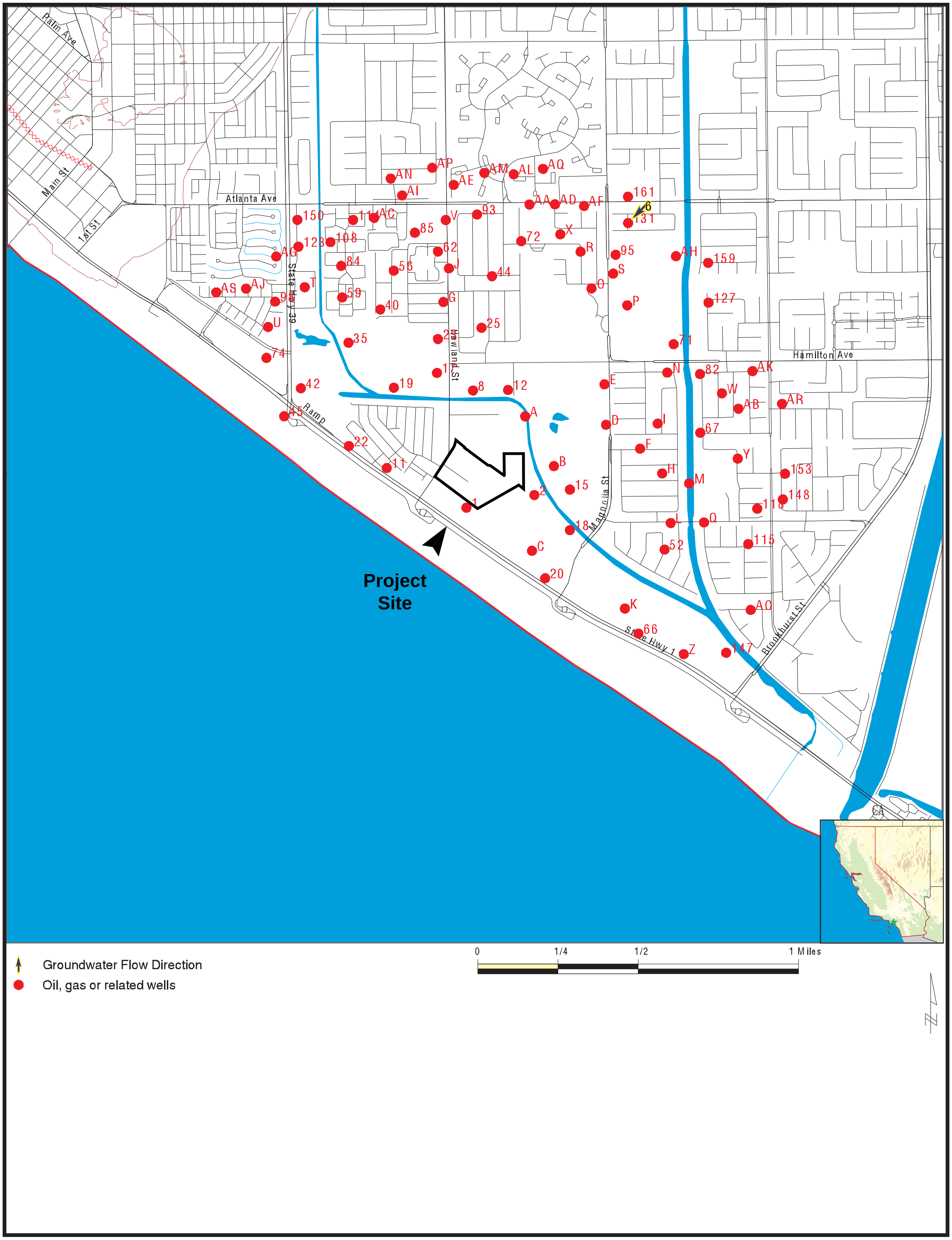


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Morton, D. M. 2004, Preliminary Geologic Map of the Santa Ana 30' x 60' Quadrangle, Souther California

GEOLOGY AND PALEONTOLOGY - FIGURE 6

Huntington Beach Energy Project - Abandoned Oil Wells

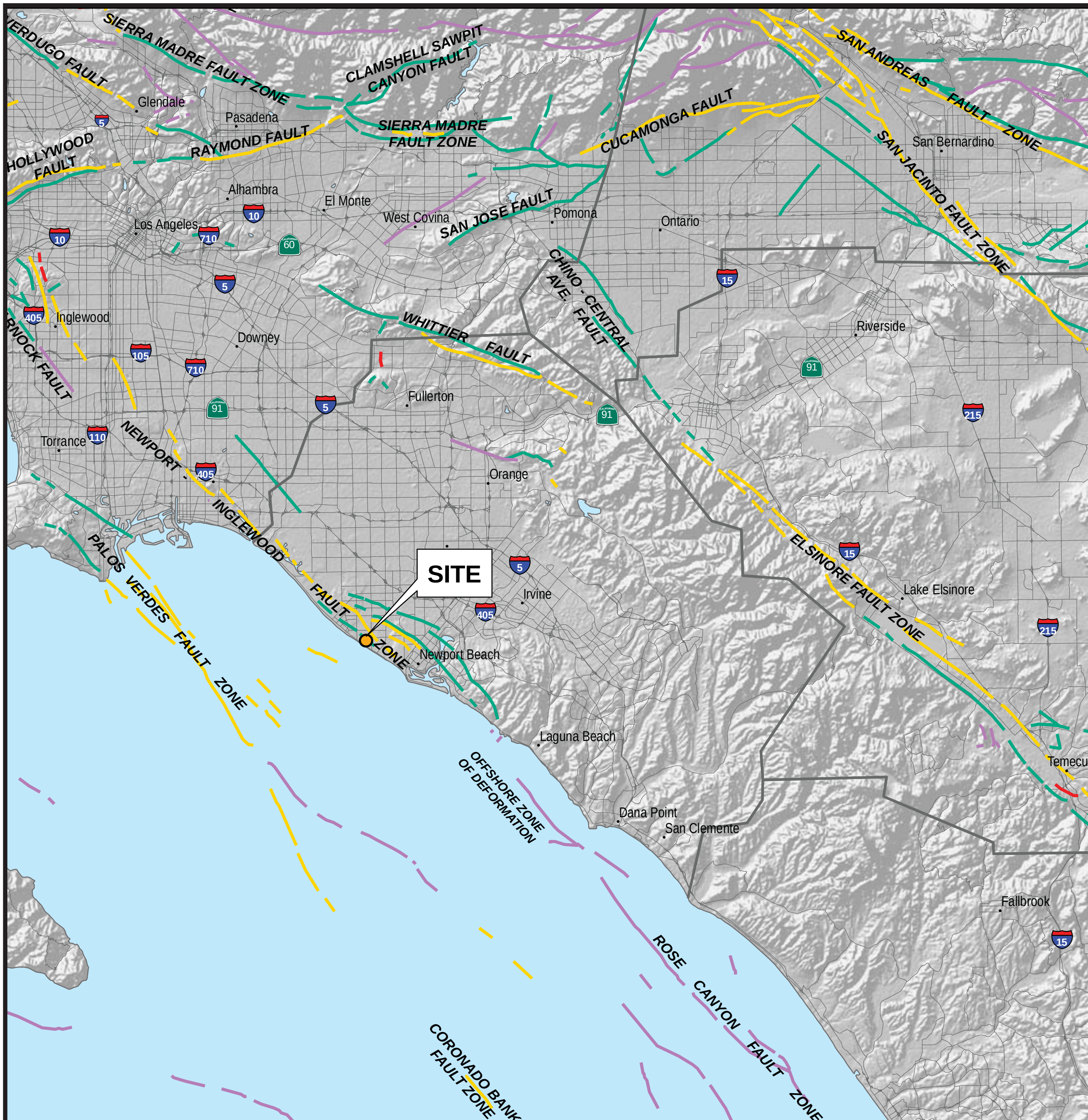


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE:AFC Appendix 5.14A Phase 1 Enviro-Site Assessment

GEOLOGY AND PALEONTOLOGY - FIGURE 7

Huntington Beach Energy Project - Fault Locations



GIS DATA SOURCE: CALIFORNIA GEOLOGICAL SURVEY (CGS); ENVIRONMENTAL SYSTEMS RESEARCH INSTITUTE (ESRI)
REFERENCE: JENNINGS, 1994, FAULT ACTIVITY MAP OF CALIFORNIA AND ADJACENT AREAS

LEGEND

FAULT ACTIVITY:

- HISTORICALLY ACTIVE
- HOLOCENE ACTIVE
- COUNTY BOUNDARIES
- LATE QUATERNARY (POTENTIALLY ACTIVE)
- QUATERNARY (POTENTIALLY ACTIVE)

N

10 0 10

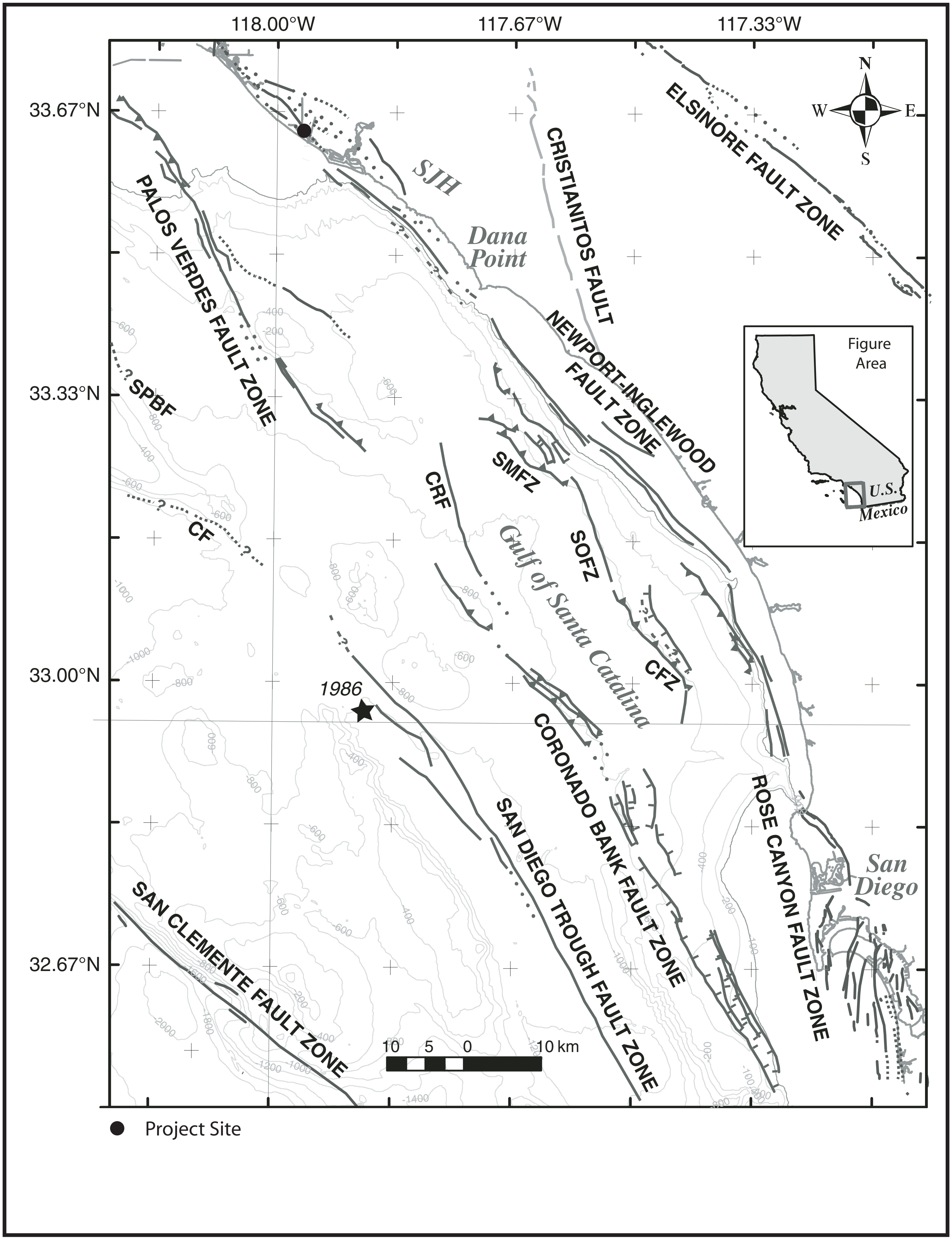
Miles

NOTE: ALL DIMENSIONS, DIRECTIONS, AND LOCATIONS ARE APPROXIMATE

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE:Ninyo & Moore

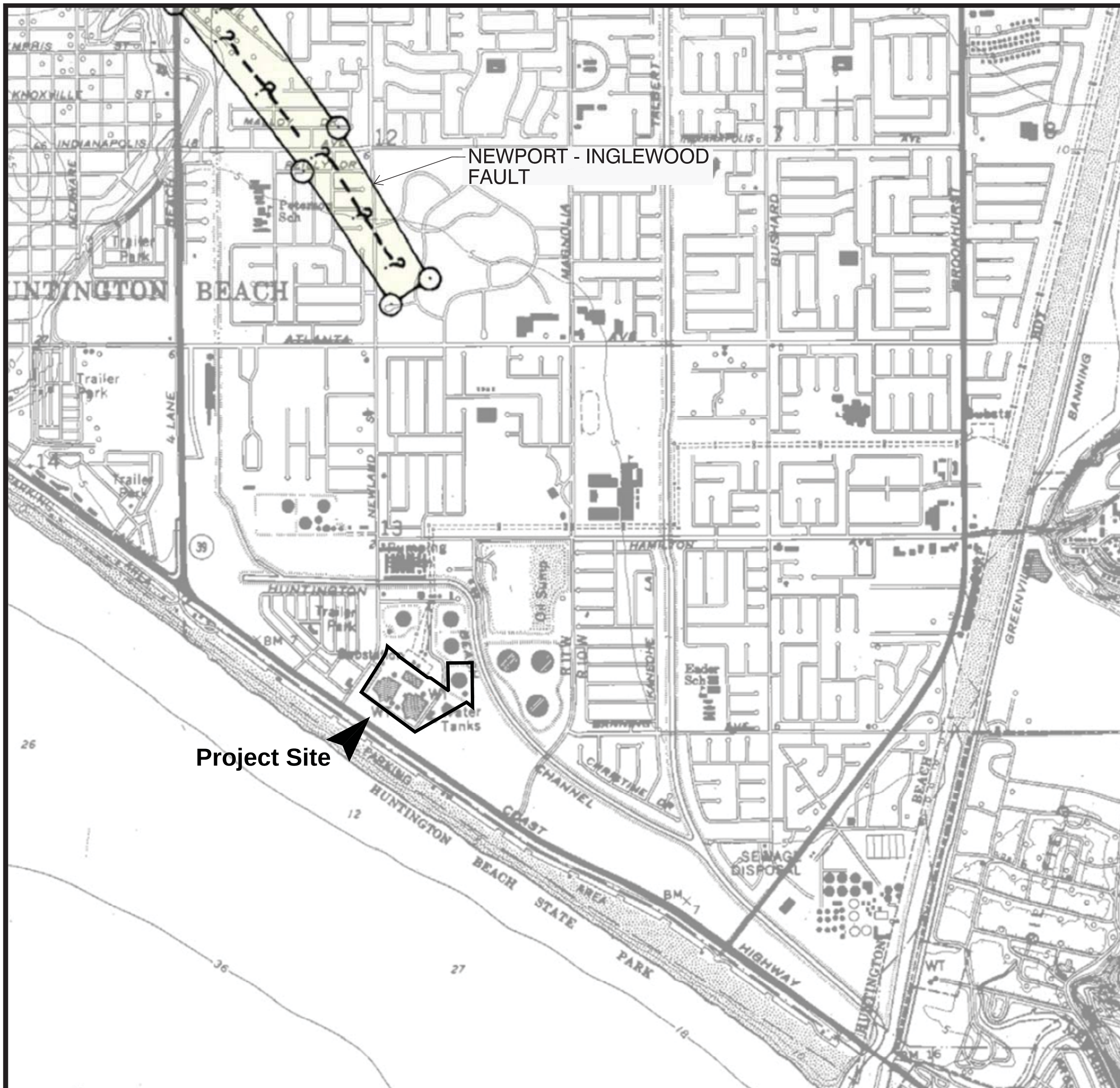
Huntington Beach Energy Project - Inner Continental Borderland Faults



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: Recent Faulting in the Gulf of Santa Catalina: San Diego to Dana Point (Ryan 2009)

GEOLOGY AND PALEONTOLOGY - FIGURE 9

Huntington Beach Energy Project - Newport-Inglewood Fault



208356_A7.DWG.....GK

REFERENCE: STATE OF CALIFORNIA SPECIAL STUDIES ZONES, NEWPORT BEACH QUADRANGLE, JULY 1, 1986.

AES Huntington Beach Energy Project

N

SCALE IN FEET

0 2,000 4,000

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

LEGEND

Potentially Active Faults

1906 C

Faults considered to have been active during Holocene time and to have a relatively high potential for surface rupture, solid line where accurately located, long dash where approximately located, short dash where inferred, dotted where concealed; query (?) indicates additional uncertainty. Evidence of historic offset indicated by year of earthquake-associated event or C for displacement caused by creep or possible creep.

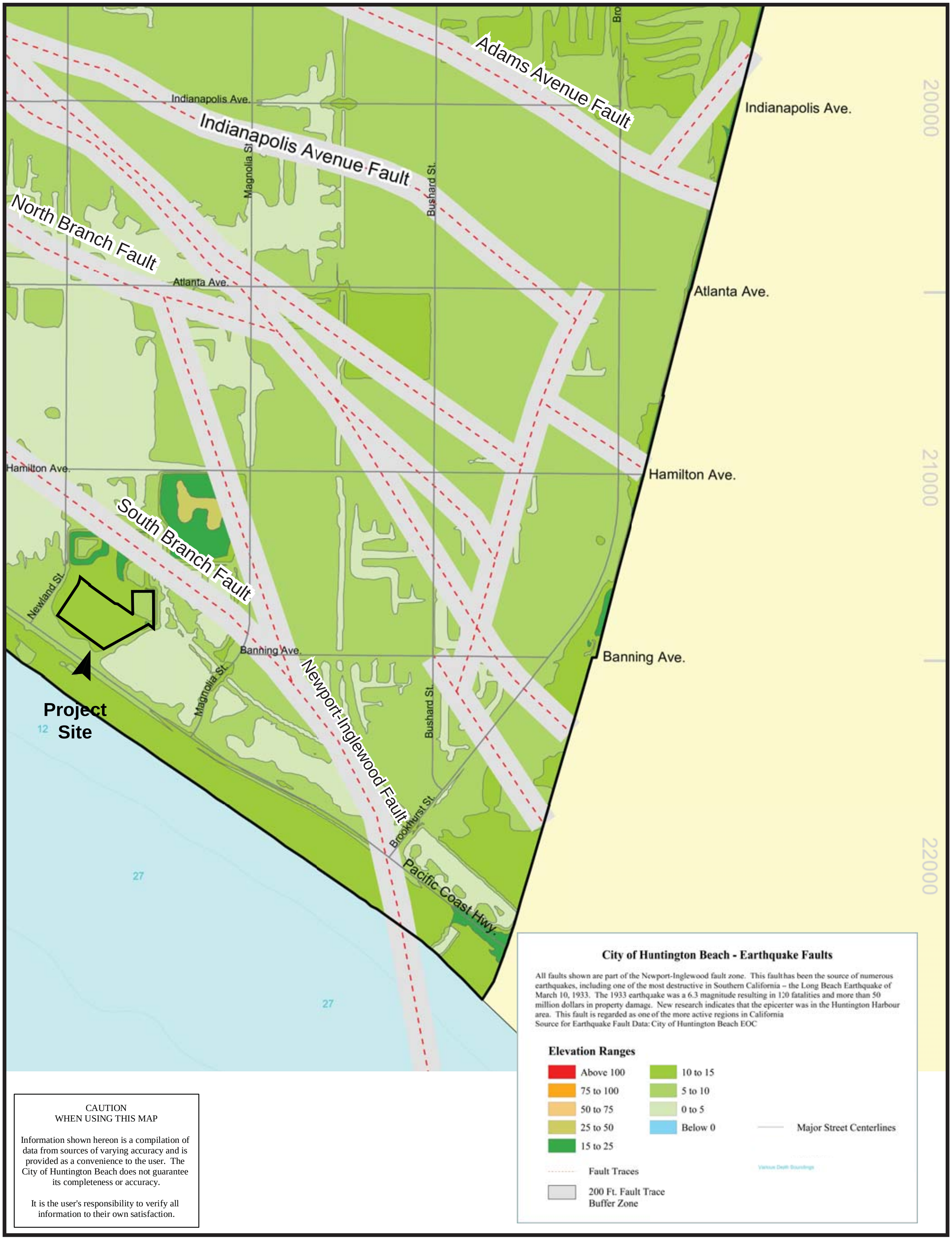
Special Studies Zone Boundaries

These are delineated as straight-line segments that connect encircled turning points so as to define special studies zone segments.

Seaward projection of zone boundary.

GEOLOGY AND PALEONTOLOGY - FIGURE 10

Huntington Beach Energy Project - Fault Map

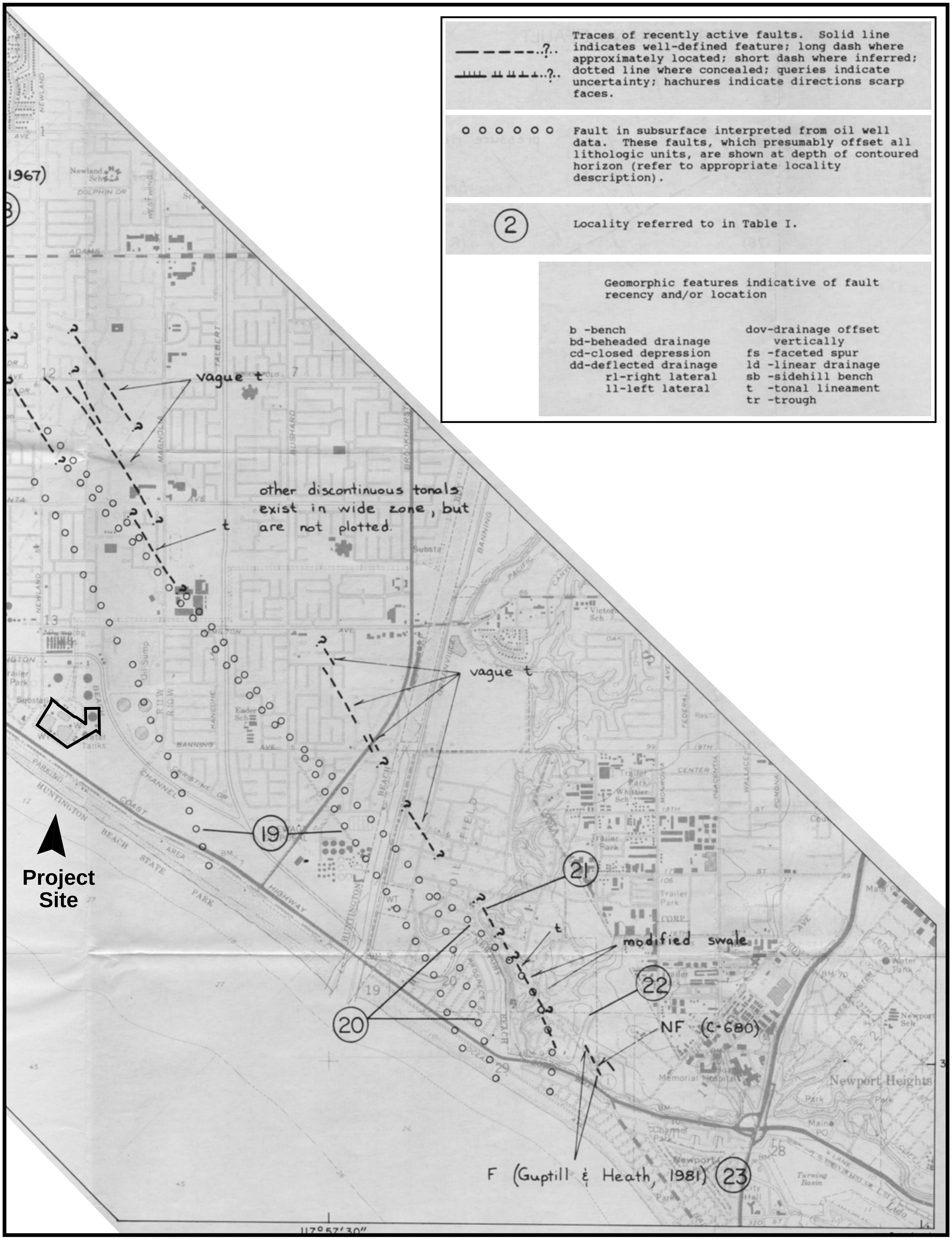


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: City of Huntington Beach EOC

GEOLOGY AND PALEONTOLOGY - FIGURE 11

Huntington Beach Energy Project - South Branch Fault

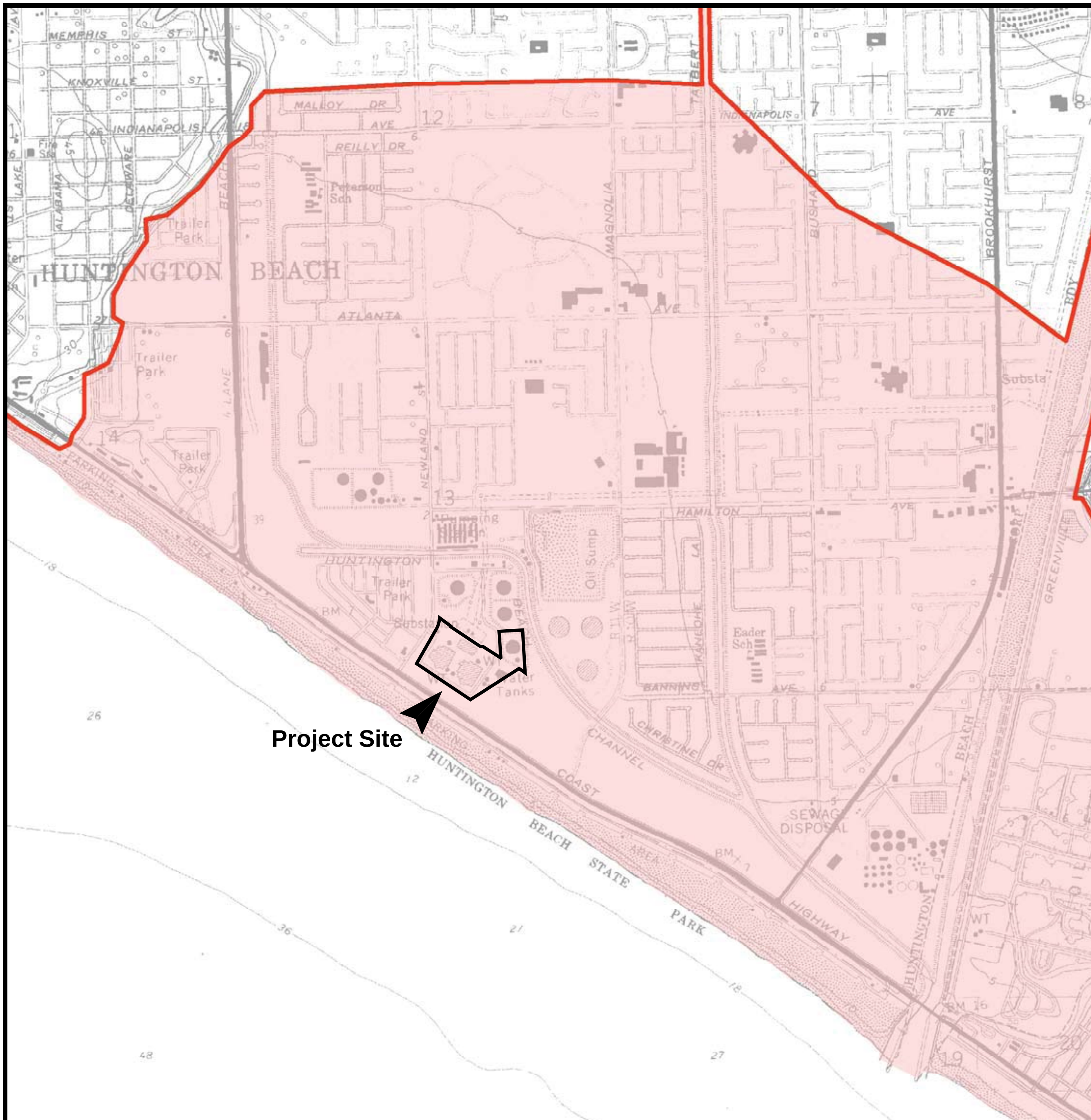


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Recently Active Traces of the Newport-Inglewood Fault Zone, Los Angeles and Orange Counties, California, Bryant 1988

GEOLOGY AND PALEONTOLOGY - FIGURE 12

Huntington Beach Energy Project - Tsunami Inundation



REFERENCE: STATE OF CALIFORNIA, 2009, TSUNAMI INUNDATION MAP FOR EMERGENCY PLANNING, COUNTY OF ORANGE, NEWPORT BEACH QUADRANGLE, DATED MARCH 15.

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

LEGEND

- TSUNAMI INUNDATION LINE
- TSUNAMI INUNDATION AREA
- AES Huntington Beach Energy Project

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: State of California, 2009 Tsunami Inudation Map for Emergency Planning, County of Orange, Newport Beach Quadrangle, Dated March 15

POWER PLANT EFFICIENCY

Edward Brady and Shahab Khoshmashrab

SUMMARY OF CONCLUSIONS

The Huntington Beach Energy Project (HBEP) would generate 939 megawatts (MW) (nominal gross output[1]) of electricity at an overall project fuel efficiency of 46 percent lower heating value (LHV[2]). While it would consume substantial amounts of energy, it would do so in the most efficient manner practicable. It would not create significant adverse effects on energy supplies or resources, would not require additional sources of energy supply, and would not consume energy in a wasteful or inefficient manner. No energy standards apply to this project. Staff therefore concludes that this project would create no significant adverse impacts on energy resources.

INTRODUCTION

One of the responsibilities of the California Energy Commission (Energy Commission) is to make findings on whether the energy use by a power plant, including the proposed HBEP power plant, would result in significant adverse impacts on the environment, as defined in the California Environmental Quality Act (CEQA). If the Energy Commission finds that HBEP's energy consumption creates a significant adverse impact, it must further determine if feasible mitigation measures could eliminate or minimize that impact. In this analysis, staff addresses the inefficient and unnecessary consumption of energy.

In order to support the Energy Commission's findings, this analysis:

- Examines whether the facility will likely present any adverse impacts upon energy resources;
- Examines whether these adverse impacts are significant; and if so,
- Examines whether feasible mitigation measures or alternatives could eliminate those adverse impacts or reduce them to a level of insignificance.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

No federal, state, or local/county laws, ordinances, regulations, and standards (LORS) apply to the efficiency of this project.

SETTING

The applicant proposes to build and operate HBEP, a 939 MW (nominal gross output) combined cycle power plant, employing the Mitsubishi Heavy Industries (MHI) 501DA (M501DA) gas turbine generators (also referred to as combustion turbine generators, or

[1] The output is based on operation under historical ambient weather conditions as recorded at Santa Ana, California (John Wayne-Orange County Airport) (HBEP 2012a, AFC § 2.1).

[2] LHV is Low Heating Value, or a measurement of the energy content of a fuel correcting for post-combustion water vapor.

CTGs) in a combined cycle configuration, to serve California's energy needs and provide operating flexibility (that is, the ability to start up, shut down, turn down, and provide load following and cycling service, when needed) (HBEP 2012a, AFC §§ 2.1, 2.7). The project's combined cycle equipment would consist of two generator trains. Each train would consist of three M501DA CTGs with evaporative inlet air cooling, three single-pressure heat recovery steam generators (HRSGs) with natural-gas-fired duct burning, and one single-pressure condensing steam turbine generator (STG) arranged in a three-on-one combined cycle train (that is, three CTGs and three HRSGs coupled with one STG) (HBEP 2012a, AFC §§ 1.1, 2.1, 2.1.5). The gas turbines and HRSGs would be equipped with dry low-NOx (oxides of nitrogen) combustors and selective catalytic reduction, respectively, to control air emissions (HBEP 2012a, AFC §§ 2.1.3, 2.1.4, 2.1.5.1, 2.1.5.2).

Natural gas at 145 psig[3] pressure would be delivered to HBEP via an existing Southern California Gas (SoCalGas) 16-inch-diameter pipeline. SoCalGas with furnish a new metering station as part of this project (HBEP 2012a, AFC §§ 2.1.1.1.1, 4.0, Figure 4.01).

ASSESSMENT OF IMPACTS

METHOD AND THRESHOLD FOR DETERMINING THE SIGNIFICANCE OF ENERGY RESOURCES

CEQA guidelines state that the environmental analysis "…shall describe feasible measures which could minimize significant adverse impacts, including where relevant, inefficient and unnecessary consumption of energy" (Title 14 CCR §15126.4[a][1]). Appendix F of the guidelines further suggests consideration of such factors as the project's energy requirements and energy use efficiency; its effects on local and regional energy supplies and energy resources; its requirements for additional energy supply capacity; its compliance with existing energy standards; and any alternatives that could reduce the wasteful, inefficient, and unnecessary consumption of energy (Title 14, CCR §15000 et seq., Appendix F).

The inefficient and unnecessary consumption of energy, in the form of non-renewable fuels such as natural gas and oil, constitutes an adverse environmental impact. An adverse impact can be considered significant if it results in:

- Adverse effects on local and regional energy supplies and energy resources;
- A requirement for additional energy supply capacity;
- Noncompliance with existing energy standards; or
- The wasteful, inefficient, and unnecessary consumption of fuel or energy.

PROJECT ENERGY REQUIREMENTS AND ENERGY USE EFFICIENCY

Any power plant large enough to fall under Energy Commission siting jurisdiction (50 MW or greater), by definition, consumes large amounts of energy. Under normal

[3] psig (pounds per square inch gage pressure). Pressure referenced to standard atmospheric conditions at 0 psig. In contrast to psia (pounds per square inch absolute with perfect vacuum as point of reference and 14.7 psia at atmospheric conditions.

conditions, HBEP would burn natural gas at a nominal rate of approximately 7,427 million British thermal units (MMBtu) per hour, LHV, during base load operation (HBEP 2012a, AFC § 2.1.3). This is a substantial rate of energy consumption that could potentially impact energy supplies under some conditions. Under expected project conditions, electricity would be generated at a full load efficiency of approximately 46 percent LHV (HBEP 2012a, AFC § 2.1.3, Figures 2.1-3a – 2.1-3c). This efficiency level compares favorably with the average fuel efficiency of a typical base load/load following combined cycle plant.

ADVERSE EFFECTS ON ENERGY SUPPLIES AND RESOURCES

Fossil Fuel Resources

The applicant has described its source of natural gas to operate the project (HBEP 2012a, AFC §§ 1.1, 2.1, 2.4.5.1, 2.4.7.1). Natural gas at 145 psig pressure would be delivered to the HBEP site via an existing Southern California Gas Company (SoCalGas) 16-inch-diameter pipeline. SoCalGas would furnish a new metering station as part of this project (HBEP 2012a, AFC §§ 2.1.1.1.1, 4.0, Figure 4.01).

SoCalGas has confirmed its system's adequate capacity to supply the project; a will-serve letter is included in AFC Appendix 4A. SoCalGas's natural gas system represents a resource of considerable capacity and offers access to adequate supplies of gas. Staff concludes that there would be adequate natural gas supply and pipeline capacity to meet the project's needs.

Water Resources

The applicant would employ the existing water service to the site (HBEP 2012a, AFC §§ 2.1.9, 5.15, Table 2.1-1, Figure 2.1-5a, 2.1-5b) via an 8-inch water line provided by the City of Huntington Beach. This water supply would provide process and potable water to the project site. The average and maximum daily water consumption is 94 gallons per minute (gpm) and 190 gpm respectively. Adjusted for 6,665 full-load hours of operation, the annual water demand would be 115 acre-feet per year.

A will-serve letter from the City of Huntington Beach is provided in AFC Appendix 5.15A. Therefore, staff believes the source of water supply represents a reliable source for the project. For further discussion of water supply, see the **Soil and Water Resources** section of this document.

ADDITIONAL ENERGY SUPPLY REQUIREMENTS

The AFC states that SoCalGas has confirmed its system's adequate capacity to supply the project (HBEP 2012a, AFC Appendix 4a). This natural gas supply is a reliable source of fossil fuel for this project. Because HBEP is replacing electric power generation facilities of equivalent output capacity but of lower efficiencies, the project would not increase the existing natural gas demand.

Natural gas fuel would be supplied to the project by SoCalGas via the existing pipeline point of connection. There appears to be no likelihood that HBEP would require additional capacity since regional supplies are currently plentiful.

COMPLIANCE WITH ENERGY STANDARDS

No standards apply to the efficiency of HBEP or other non-cogeneration projects.

ALTERNATIVES TO REDUCE WASTEFUL, INEFFICIENT, AND UNNECESSARY ENERGY CONSUMPTION

HBEP could create significant adverse impacts on energy resources if alternatives reduced the project's fuel use. The evaluation of alternatives to the project (that could reduce wasteful, inefficient, or unnecessary energy consumption) first requires the examination of the project's energy consumption. Project fuel efficiency, and therefore its rate of energy consumption, is determined by both the configuration of the power producing system and the selection of equipment used to generate its power.

Project Configuration

HBEP would be a combined cycle power plant. Each of the two new power blocks would generate electric power by utilizing three gas turbines and a STG (steam turbine generator) operating on heat energy recovered from the gas turbine exhaust (HBEP 2012a, AFC §§ 2.1.3, 2.1.4). By recovering this heat, which would otherwise be lost up the exhaust stacks, the efficiency of any combined cycle power plant is increased considerably from that of either gas turbines or a steam turbine operating alone. This configuration is well suited to the large, steady loads met by a base load plant that generates energy efficiently over long periods of time.

The applicant proposes to install evaporative inlet air coolers, single-pressure HRSGs, steam turbine units, and power cycle cooling systems (air-cooled condensers) (HBEP 2012a, AFC §§ 2.1, 2.1.3, 2.1.4). Staff believes these features provide meaningful efficiency enhancements to HBEP. The three-on-one combustion turbine/HRSG configuration is also highly efficient during unit turndown since one gas turbine can be shut down, leaving the other two fully loaded. This allows the efficient operation of two gas turbines instead of the operation of three gas turbines operating at a less efficient part load to generate the number of MWs.

The HBEP's design would incorporate AES' proprietary rapid start technology, which would allow the combustion turbine to reach base load more quickly as well as increase the ramping rate for both loading and unloading the power trains while operating in a load following mode of operation.[4] AES's approach is designed to start quickly, and while in start-up phase, operate at an efficiency rating comparable to a typical simple cycle plant. Within a relatively short period of time, the steam turbine generator would begin producing power. The plant would then operate at near a typical combined cycle efficiency rating.[5]

Equipment Selection

The M501DA gas turbine is the basic building block for the three-on-one combined cycle system. The M501DA provides a combination of efficiency and operating history

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[4] Refer to e-mail from Stephen O'Kane/AES to Chris Perri/SCAQMD dated 12/1/9/12, which discusses AES' approach toward maximizing part load operation and minimizing ramp times.

[5] For further discussion of fast-start, combined cycle gas turbine systems, refer to "Gas Turbine Combined Cycle Fast Start: The Physics Behind the Concept," Power Engineering, June 2013 edition pp. 40-49.

comparable to the industry competition. The applicant would provide two independent three-on-one power blocks, each with an ISO[6] rated capacity (GTW 2013)[7] of 506.2 MW and 51.8 percent combined cycle efficiency. The stand-alone simple cycle capacity for the M501DA CTG is 113.95 MW at 34.9 percent efficiency (9,780 Btu/kWh[8] LHV).[9] HBEP would employ AES' rapid start technology which would effectively reduce the time required for startup and shutdown of the turbine generators having similar thermal efficiency.

One alternative CTG with similar capacity, efficiency and rapid start-up features is the General Electric (GE) LMS100 aeroderivative CTG with an ISO rating of 98.2 MW at 45 percent (7,580 Btu/kWh LHV) in a simple cycle configuration.[10] Where the simple cycle efficiency of the M501DA is lower than the LMS100 (34.9 percent vs. 45 percent, respectively), the MHI gas turbine nominal capacity exceeds GE by 15.75 MW (113.95 MW vs. 98.2 MW). Used in a 3 x 1 configuration, this capacity difference would be magnified three times to about 9 percent (15.75 x 3)/506.2 = 0.093).

Selecting between these machines is also based on commercial availability. The M501DA model has over two decades of operational history and has been commercially available since 1980.[7] (Also see analysis below under **Natural Gas-Burning Technologies**.)

Efficiency of Alternatives to the Project

HBEP's objectives include the generation of base load electricity and load-following all hours of the day to serve energy requirements from the California Independent Systems Operator (CAISO) (HBEP 2012a, AFC §§ 1.2, 2.1, 6.1).

Alternative Generating Technologies

Alternative generating technologies for HBEP are considered in the AFC (HBEP 2012a, AFC §§ 1.5, 6.6). For purposes of this analysis, solar thermal technology, other fossil fuels, nuclear, biomass, hydroelectric, wind, and geothermal technologies are all considered. Given the project objectives, location, air pollution control requirements, and the commercial availability of the above technologies, staff agrees with the applicant that only natural gas-burning technologies (whether coupled with solar technology or not) are feasible.

Natural Gas-Burning Technologies

Fuel consumption is one of the most important economic factors in selecting an electric generator; fuel typically accounts for over two-thirds of the total operating costs of a fossil fuel-fired power plant. Under a competitive power market system, where operating costs are critical in determining the competitiveness and profitability of a power plant, the plant owner is strongly motivated to purchase fuel-efficient machinery.

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[6] ISO (International Organization for Standardization): In this case, ISO Standard 27.040 for measurement of gas and steam turbine capacity.

[7] pg. 28, "2013 GTW Combined Cycle Specs," Gas Turbine World 2013 Handbook, January-February 2013.

[8] Kilo Watt hours

[9] ibid., pg. 18, "Simple Cycle OEM Ratings"

[10] ibid., pg. 15.

A modern base load combined cycle power plant typically offers a higher efficiency range than a combined cycle plant intended to provide operating flexibility (i.e.; quick start and load following capabilities), such as HBEP. Despite this efficiency advantage, a base load plant would not meet the project objective of providing operating flexibility.

The MHI501DA A possible alternative to a small aeroderivative CTG is to upsize to a larger industrial-duty next generation G-class (e.g., Siemens-Westinghouse 501G) which would use partial steam cooling to allow slightly higher temperatures, yielding proportionately greater efficiency. In actual operation, one would expect to see the difference in efficiency diminish, since larger-capacity G-class turbines run at less than optimum (full) output more frequently than smaller-capacity F-class turbines. (Gas turbine efficiency drops rapidly at less than full load.). Given the minor efficiency improvement promised by the G-class turbine, and since this machine would have to operate at less than optimum base load efficiency in order to meet the project load capacity requirements, staff believes the applicant’s decision to purchase the M501 series machines is reasonable.

Another possible alternative to the 501 class advanced gas turbine is an H-class next generation machine with a claimed fuel efficiency of 60 percent LHV at ISO conditions. This high efficiency is achieved through a higher pressure ratio and firing temperature, made possible by cooling the initial turbine stages with steam instead of air. The first Frame 7H machine has only recently completed commissioning at the Inland Empire Energy Center in Riverside County, California. Given the lack of commercial experience with this machine and the project load requirements, staff agrees with the applicant’s decision to use the smaller, more flexible M501 model.

As an alternative to HBEP, retrofitting the existing AES Huntington Beach Generating Station while maintaining the existing boilers would not provide the operating flexibility and efficiency improvement offered by the M501DA or equivalent modern gas turbines in a combined cycle configuration.

Inlet Air Cooling

Other alternatives include gas turbine inlet air cooling methods. The two most common techniques are evaporative coolers or foggers, and chillers. Both increase power output by cooling gas turbine inlet air. A mechanical chiller offers greater power output than the evaporative cooler on hot, humid days; however, it consumes electric power to operate its refrigeration process, slightly reducing its overall net power output and overall efficiency. An absorption chiller uses less electricity but necessitates the use of a substantial amount of ammonia. An evaporative cooler or fogger boosts power output most efficiently on dry days; it uses less electricity than a mechanical chiller, possibly producing a slightly higher operating efficiency. Efficiency differences between these alternatives are relatively insignificant.

Given the climate at the project site and the relative lack of clear superiority of one system over another, staff agrees that the applicant’s choice of an evaporative gas turbine inlet air cooling system would have no significant adverse energy impacts.

Alternative Heat Rejection System

The applicant proposes to employ a dry cooling system (air-cooled condensers) as the means for rejecting power cycle heat from the steam turbine. An alternative heat rejection system would utilize a wet cooling system (a cooling tower).

The local climate in the project area is characterized by relatively moderate coastal temperatures and variable RH (relative humidity). In low temperature and high relative humidity, the air-cooled condenser performs slightly better than the evaporative cooling tower. In high temperatures and low relative humidity, the evaporative cooling tower performs marginally better than the air-cooled condenser. However, due to limitation of using existing water supplies, the applicant has chosen to use dry cooling. This is acceptable to staff, given that only a slight efficiency improvement would be provided by the wet cooling alternative.

Staff concludes that the selected project configuration (rapid response combined cycle) and generating equipment (M501DA gas turbines and associated cooling systems) represent the most efficient feasible combination for satisfying the project’s objectives. The three-on-one combustion turbine/HRSG configuration also allows for high efficiency during unit turndown, shutting down one combustion turbine down, leaving the others fully loaded. This offers an efficiency advantage over the larger machines during unit turndown. There are no alternatives that would significantly reduce energy consumption while satisfying the project’s objectives of producing base load electricity and ancillary load-following services.

Staff, therefore, believes that HBEP would not create a significant adverse impact on energy resources.

CUMULATIVE IMPACTS

The only industrial facility proximate to the project site is the proposed Poseidon project, a 50 million gallon per day (mgd) desalinization plant, which would share the same industrial site as HBEP. The Poseidon project would not consume natural gas for its operation. Thus, it would not create a cumulative energy impact when combined with HBEP. Staff knows of no other projects that could produce cumulative energy impacts.

Staff believes that the construction and operation of the project would not create indirect impacts that would have otherwise occurred without this project. Older, less efficient power plants consume more natural gas than new, more efficient plants such as HBEP. Natural gas is burned by the most competitive power plants on the spot market, and the most efficient plants run the most frequently provided that they meet their objectives. The high efficiency of the proposed HBEP should allow it to compete favorably, run at high capacity, and replace less efficient power generating plants.

The project would therefore not impact the cumulative amount of natural gas consumed for power generation.

NOTEWORTHY PUBLIC BENEFITS

The applicant expects to increase power supply reliability in the California electricity market by both meeting the state's energy needs and contributing to regional electricity reserves. By doing so in a fuel-efficient manner, a combined cycle system that optimizes quick-start capabilities provides system simplicity, efficiency and flexibility. Employing these features by replacing the existing electrical generation facilities, which are old and relatively inefficient, HBEP would benefit California's electricity consumers.

CONCLUSIONS AND RECOMMENDATIONS

HBEP, if constructed and operated as proposed, would generate 939 megawatts (MW) (gross output at ISO conditions) of electricity at an overall project fuel efficiency of 46 percent LHV. While it would consume substantial amounts of energy, it would do so in the most efficient manner practicable. It would not create significant adverse effects on energy supplies or resources, would not require additional sources of energy supply, and would not consume energy in a wasteful or inefficient manner. No energy standards apply to this project. Staff therefore concludes that this project would create no significant adverse impacts on energy resources.

No cumulative impacts on energy resources are likely. Facility closure would not likely present significant impacts on electric system efficiency.

PROPOSED CONDITIONS OF CERTIFICATION

No conditions of certification are proposed.

REFERENCES

GTW 2013 — Gas Turbine World 2013 performance specs, 30th Edition.

HBEP 2012a – AES Southland Development, LLC / Stephen O'Kane (tn 66003). A*pplication for Certification (AFC), Volume I & II, dated, June 27, 2012*. Submitted to CEC/Dockets on 06/27/2012.

POWER PLANT RELIABILITY

Shahab Khoshmashrab

SUMMARY OF CONCLUSIONS

The applicant predicts an equivalent availability factor[1] of 98 percent, which staff believes is achievable. Based on a review of the proposal, staff concludes that the Huntington Beach Energy Project (HBEP) would be built and would operate in a manner consistent with industry norms for reliable operation.

INTRODUCTION

In this analysis, California Energy Commission (Energy Commission) staff (staff) addresses the reliability issues of HBEP to determine if the power plant is likely to be built in accordance with typical industry norms for reliable power generation. Staff uses these norms as a benchmark because they ensure that the resulting project would not be likely to degrade the overall reliability of the electric system it serves (see the "Setting" subsection, below).

The scope of this power plant reliability analysis covers these benchmarks:

- equipment availability and plant maintainability;
- fuel and water availability; and,
- power plant reliability in relation to natural hazards.

Staff examined the project design criteria to determine if the project is likely to be built in accordance with typical industry norms for reliable power generation. While the applicant has predicted an equivalent availability factor of 98 percent for the HBEP project (see below), staff has used the above benchmarks as appropriate industry norms to evaluate the project's reliability.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

No federal, state, or local/county laws, ordinances, regulations, or standards (LORS) apply to the reliability of this project.

SETTING

In the restructured competitive electric power industry, the responsibility for maintaining system reliability falls largely to the state's control area operators, such as the California Independent System Operator (ISO), which purchase, dispatch, and sell electricity throughout the state. How the ISO and other control area operators ensure system reliability is an evolving process; new protocols are being developed and put in place to ensure sufficient reliability in the competitive market system. "Must-run" power purchase

[1] Equivalent availability factor is the percentage of time a unit is available for dispatch, and reflects the probability of forced (unexpected) outages.

agreements and “participating generator” agreements are two mechanisms that ensure an adequate supply of reliable power.

The ISO also requires that power plants selling ancillary services, as well as those holding reliability must-run contracts, fulfill certain requirements, including:

- filing periodic reports on plant reliability;
- reporting all outages and their causes; and
- scheduling all planned maintenance outages with the California ISO.

The ISO’s mechanisms to ensure adequate power plant reliability have apparently been developed with the assumption that individual power plants competing to sell power into the system will exhibit reliability levels similar to those of power plants of past decades. However, there is reason to believe that, with free market competition, financial pressures on power plant owners to minimize their capital outlays and maintenance expenditures may ultimately reduce the reliability of many existing and newly constructed power plants. Until the state’s restructured competitive electricity market has undergone a shakeout period and the effects of varying power plant reliability are thoroughly understood and compensated for, staff recommends that power plant owners continue to build and operate their projects to the industry’s current level of reliability.

The 939 megawatt (MW) (nominal gross output) HBEP project with operating flexibility (that is, the ability to start up, shut down, turn down, and provide load following, when needed) would allow the system operator to adapt the plant’s output to changing conditions in the energy and ancillary services markets.

The project is expected to achieve an equivalent availability factor of 98 percent (HBEP 2012a, AFC § 2.6.1). The project’s annual capacity factor[2] is expected to be in the range of 35-50 percent (HBEP 2012a, AFC § 2.7).

ASSESSMENT OF IMPACTS

METHOD FOR DETERMINING RELIABILITY

The Energy Commission must make findings as to how the project is designed, sited, and operated in order to ensure its safe and reliable operation (Title 20, CCR § 1752[c]). Staff will conclude that a project is acceptable if it does not degrade the reliability of the utility system to which it is connected. This will be the case if a project is at least as reliable as other power plants on that system.

The availability factor of a power plant is the percentage of time it is available to generate power; both planned and unplanned outages subtract from this availability. Measures of power plant reliability are based upon both the plant’s actual ability to

[2] Capacity factor is a measure of how much electricity a power plant actually produces during the year as compared to the maximum power it could produce at continuous full power operation during the same period of time. For example, a capacity factor of 35 percent means that the plant would operate 3,066 hours in a year (8,760 hours).

generate power when it is considered to be available, and upon starting failures and unplanned (or forced) outages. For practical purposes, reliability can be considered a combination of these two industry measures, making a reliable power plant one that is available when called upon to operate. Power plant systems must be able to operate for extended periods without shutting down for maintenance or repairs. Achieving this reliability requires adequate levels of equipment availability, plant maintainability with scheduled maintenance outages, fuel and water availability, and resistance to natural hazards. Staff examines these factors for a project and compares them to industry norms. If they compare favorably for this project, staff will then conclude that the HBEP project will be as reliable as other power plants on the electric system and will not degrade system reliability.

EQUIPMENT AVAILABILITY

Equipment availability would be ensured by adopting appropriate quality assurance/quality control (QA/QC) programs during the design, procurement, construction, and operation of the plant and by providing for the adequate maintenance and repair of the equipment and systems discussed below.

Quality Control Program

The applicant describes a quality assurance/quality control (QA/QC) program (HBEP 2012a, AFC § 2.6.6) that is typical of the power industry. Equipment would be purchased from qualified suppliers based on technical and commercial evaluations. Suppliers' personnel, production capability, past performance, QA/QC programs and quality history would be evaluated. The project owner would perform receipt inspections, test components, and administer independent testing contracts. Staff expects that implementation of this program would result in standard reliability of design and construction. To ensure this implementation, staff has proposed appropriate conditions of certification in the section of this document entitled **Facility Design**.

PLANT MAINTAINABILITY

Equipment Redundancy

A generating facility must be capable of being maintained while operating. A typical approach to this is to provide redundant examples of those pieces of equipment that are most likely to require service or repair.

The applicant plans to provide an appropriate redundancy of function for the project (HBEP 2012a, AFC § 2.6.2, Table 2.6-1). Because the project consists of two independent equipment trains, it is inherently reliable. A single equipment failure cannot disable more than one train, which allows the plant to continue to generate, but at reduced output. Plant ancillary systems are also designed with adequate redundancy to ensure their continued operation if equipment fails. Staff believes that this project's proposed equipment redundancy would be sufficient for its reliable operation.

Maintenance Program

Equipment manufacturers provide maintenance recommendations for their products, and the applicant would base the project's maintenance program on those recommendations (HBEP 2012a, AFC § 2.6.1). The program would encompass both preventive and predictive maintenance techniques. Maintenance outages would probably be planned for periods of low electricity demand. Staff expects that the project would be adequately maintained to ensure an acceptable level of reliability.

FUEL AND WATER AVAILABILITY

The long-term availability of fuel and of water for cooling or process use is necessary to ensure the reliability of any power plant. The need for reliable sources of fuel and water is obvious; lacking long-term availability of either source, the service life of the plant could be curtailed, threatening both the power supply and the economic viability of the plant.

Fuel Availability

Natural gas would be delivered to the HBEP project via an existing 16-inch diameter Southern California Gas Company (SoCalGas) line (HBEP 2012a, AFC §§ 2.1.7, 2.6.3). SoCalGas has confirmed its system's adequate capacity to supply the project; a will-serve letter is included in AFC Appendix 4A. SoCalGas's natural gas system represents a resource of considerable capacity and offers access to adequate supplies of gas. Staff concludes that there would be adequate natural gas supply and pipeline capacity to meet the project's needs.

Water Supply Reliability

The HBEP project would use water from the City of Huntington Beach for power plant cooling, process water, fire protection and potable water. A will-serve letter from the City of Huntington Beach is provided in AFC Appendix 5.15A. Therefore, staff believes the source of water supply represents a reliable source for the project. For further discussion of water supply, see the **Soil and Water Resources** section of this document.

POWER PLANT RELIABILITY IN RELATION TO NATURAL HAZARDS

Natural forces can threaten the reliable operation of a power plant. Seismic shaking (earthquakes), flooding, and tsunami could present credible threats to the project's reliable operation.

Seismic Shaking

The site lies within a seismically active area (HBEP 2012a, AFC § 2.5.2); see the **Geology and Paleontology** section of this document. The project would be designed and constructed to the latest appropriate LORS (HBEP 2012a, AFC Appendix 2C). Compliance with current seismic design LORS represents an upgrading of performance during seismic shaking compared to older facilities since these LORS have been continually upgraded. Because it would be built to the latest seismic design LORS, this project would likely perform at least as well as, and perhaps better than, existing plants in the electric power system. Staff has proposed conditions of certification to ensure this; see the section of this document entitled **Facility Design**. In light of the general historical performance of California power plants and the electrical system in seismic events, staff has no special concerns with the power plant's functional reliability during seismic events.

Flooding

The project site is outside the 100-year floodplain (HBEP 2012a, AFC § 5.15.1.3). A drainage, erosion and sediment control plan would be implemented (see **Facility Design**). In light of this, Staff believes there are no special concerns with power plant functional reliability due to flooding.

Tsunami

While not likely to occur during the project design life, the site is subject to inundation by tsunami. U.S. Building codes generally have not addressed the subject of designing structures in tsunami zones. FEMA's Coastal Construction Manual (FEMA 55), developed to provide design and construction guidance for structures built in coastal areas, addresses seismic loads for coastal structures and provides information on tsunami and associated loads. FEMA 55 cites ASCE Standard ASCE 7-10, *Minimum Design Loads for Buildings and Other Structures* as the reference to be consulted during design of structures. ASCE 7-10 is codified in California Building Code 2010. Project would be designed and constructed to this code (see **Facility Design**).

For further discussion, also see **Soil and Water Resources** and **Geology and Paleontology**.

COMPARISON WITH EXISTING FACILITIES

Industry statistics for availability factors (as well as other related reliability data) are maintained by the North American Electric Reliability Corporation (NERC). NERC regularly polls North American utility companies on their project reliability through its Generating Availability Data System, and periodically summarizes and publishes those statistics on the Internet [http://www.nerc.com]. The NERC reported the following generating unit statistic for the years 2005 through 2009 (NERC 2010):

For combined cycle units (all MW sizes):

Availability Factor = 89.54 percent

The project's gas turbines have been on the market for several years and are expected to exhibit typically high availability. The applicant's expectation of an annual availability factor of 98 percent (HBEP 2012a, AFC § 2.6.1) appears reasonable when compared with NERC figures for similar plants throughout North America (see above). In fact, these machines can well be expected to outperform the fleet of various (mostly older and smaller) gas turbines that make up NERC statistics. Additionally, because the plant would consist of two generating trains, maintenance can be scheduled during times of the year when the full plant output is not required to meet market demand, which is typical of industry standard maintenance procedures. The applicant's estimate of plant availability, therefore, appears to be realistic. Stated procedures for assuring the design, procurement, and construction of a reliable power plant appear to be consistent with industry norms, and staff believes they would ultimately produce an adequately reliable plant.

NOTEWORTHY PROJECT BENEFITS

This project would enhance power supply reliability in the California electricity market by helping to meet the state's growing energy demand and providing operating flexibility (that is, the ability to start up, shut down, turn down, and provide load following, when needed). The fact that the project consists of two generator trains, configured as independent equipment trains, provides inherent reliability. A single equipment failure cannot disable more than one train, thereby allowing the plant to continue to generate, though at reduced output.

CONCLUSION

The applicant predicts an equivalent availability factor of 98 percent, which staff believes is achievable. Based on a review of the proposal, staff concludes that the plant would be built and operated in a manner consistent with industry norms for reliable operation. No conditions of certification are proposed.

PROPOSED CONDITIONS OF CERTIFICATION

No conditions of certification are proposed.

REFERENCES

HBEP 2012a – AES Southland Development, LLC / Stephen O'Kane (tn 66003). A*pplication for Certification (AFC), Volume I & II, dated, June 27, 2012*. Submitted to CEC/Dockets on 06/27/2012.

NERC (North American Electric Reliability Council). 2010. 2005–2009 Generating Availability Report.

TRANSMISSION SYSTEM ENGINEERING

Laiping Ng and Mark Hesters

SUMMARY OF CONCLUSIONS

The California Independent System Operator (California ISO) Queue Cluster Phase I or Phase II Interconnection Study is not available for staff to review at this time. The Phase I or Phase II Study is required for staff to determine the potential need for downstream transmission facilities. Without the Phase I or Phase II Study, staff cannot determine if the proposed interconnection facilities including the Huntington Beach Energy Project (HBEP) 230 kV switchyard, two 230 kV overhead generator tie-lines, and the termination at the Southern California Edison (SCE) Huntington Beach Switching Station are adequate and in accordance with industry standards and good utility practices. Staff cannot determine if the HBEP is acceptable according to engineering laws, ordinances, regulations, and standards (LORS).

In addition, if the study shows the project would cause any transmission line overloads which might require transmission line reconductoring or other significant downstream upgrades, a general California Environmental Quality Act (CEQA) analysis will be required. The environmental analysis of potential upgrades could cause a delay in the licensing process for the Huntington Beach Energy Project.

INTRODUCTION

STAFF ANALYSIS

This Transmission System Engineering (TSE) analysis examines whether or not the facilities associated with the proposed interconnection conform to all applicable LORS required for safe and reliable electric power transmission. Additionally, under the California Environmental Quality Act (CEQA), the Energy Commission must conduct an environmental review of the “whole of the action,” which may include facilities not licensed by the Energy Commission (Cal Code Regs, tit 14, §15378). Therefore, the Energy Commission must identify the system impacts and necessary new or modified transmission facilities that would be required downstream of the proposed interconnection and that represent the “whole of the action.”

Energy Commission staff analyzes studies performed by the interconnecting authority, in this case the California ISO, to determine the impacts on the transmission grid from the proposed interconnection. Staff’s analysis also identifies new or modified facilities downstream of the first point of interconnection that may require mitigation measures. The proposed project would connect to the SCE transmission network and requires analysis by SCE and approval of the California ISO.

ROLE OF SOUTHERN CALIFORNIA EDISON

SCE is responsible for ensuring electric system reliability on its transmission system with the addition of the proposed transmission modifications, and determines both the standards necessary to ensure reliability and whether the proposed transmission modifications conform to existing standards. The California ISO will provide analysis in its Phase I and Phase II Interconnection Studies, its approval for the facilities, and changes required in its system to add the proposed transmission modifications.

ROLE OF CALIFORNIA INDEPENDENT SYSTEM OPERATOR

The California ISO is responsible for dispatching generating units in California, ensuring electric system reliability for all participating transmission owners and for developing the standards and procedures necessary to maintain system reliability. The California ISO will review SCE's studies to ensure the adequacy of the proposed HBEP transmission interconnection. The California ISO will also determine if the proposed transmission modifications of the SCE transmission system will impact overall system reliability. According to the California ISO Tariff, it will determine the need for transmission additions or upgrades downstream from the interconnection point to ensure reliability of the transmission grid. The California ISO will, therefore, perform the Phase I Interconnection Study and provide its analysis, conclusions, and recommendations. The Phase II Interconnection Study includes the California ISO conclusions and recommendations. If necessary, the California ISO will provide written and verbal testimony on its findings at the Energy Commission hearings.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

- California Public Utilities Commission General Order 95, *Rules for Overhead Electric Line Construction*, formulates uniform requirements for construction of overhead transmission lines. Compliance with this order ensures adequate service and safety to persons engaged in the construction, maintenance, and operation or use of overhead electric lines and to the public in general.
- California Public Utilities Commission General Order 128, *Rules for Construction of Underground Electric Supply and Communications Systems*, formulates uniform requirements and minimum standards to be used for underground supply systems to ensure adequate service and safety to persons engaged in the construction, maintenance, and operation or use of underground electric lines and to the public in general.
- The National Electric Safety Code, 1999, provides electrical, mechanical, civil, and structural requirements for overhead electric line construction and operation.
- The Western Electricity Coordinating Council (WECC) Planning Standards are merged with the North American Electric Reliability Corporation (NERC) Planning Standards and provide the system performance standards used in assessing the reliability of the interconnected system. These standards require the continuity of service to loads as the first priority, and preservation of interconnected operation as a secondary priority. Certain aspects of the NERC/WECC standards are either more stringent or more specific than the NERC standards alone. These standards provide planning for electric systems so as to withstand the more probable forced and maintenance outage system contingencies at projected customer demand and anticipated electricity transfer levels, while continuing to operate reliably within equipment and electric system thermal, voltage, and stability limits. These standards include the reliability criteria for system adequacy and security, system modeling data requirements, system protection and control, and system restoration. Analysis

of the WECC system is based to a large degree on section I. A. of the standards, entitled *NERC and WECC Planning Standards with Table I and WECC Disturbance-Performance Table,* and on section I. D., entitled *NERC and WECC Standards for Voltage Support and Reactive Power*. These standards require that the results of power flow and stability simulations verify defined performance levels. Performance levels are defined by specifying the allowable variations in thermal loading, voltage, and frequency, and loss of load that may occur on systems during various disturbances. Performance levels range from no significant adverse effects inside and outside a system area during a minor disturbance (loss of load or a single transmission element out of service) to a level that seeks to prevent system cascading and the subsequent blackout of islanded areas during a major disturbance (such as loss of multiple 500 kV lines along a common right of way, and/or multiple generators). While controlled loss of generation or load or system separation is permitted in certain circumstances, its uncontrolled loss is not permitted (WECC 2002).

- NERC Reliability Standards for the Bulk Electric Systems of North America provide national policies, standards, principles, and guidelines to assure the adequacy and security of the electric transmission system. The NERC Reliability Standards provide for system performance levels under normal and contingency conditions. While these reliability standards are similar to NERC/WECC standards, certain aspects of the NERC/WECC standards are either more stringent or more specific than the NERC standards with regard to power flow and stability simulations for transmission system contingency performance. The NERC Reliability Standards apply not only to interconnected system operation but also to individual service areas (NERC 2006).
- California ISO planning standards also provide standards and guidelines to assure adequacy, security, and reliability in the planning of the California ISO transmission grid facilities. The California ISO standards incorporate the NERC/WECC and NERC standards. With regard to power flow and stability simulations, these standards are similar to the NERC/WECC or NERC standards for transmission system contingency performance. However, the California ISO standards also provide some additional requirements that are not found in the NERC/WECC or NERC standards. The California ISO standards apply to all participating transmission owners interconnecting to the grid controlled by California ISO. They also apply when there are any impacts to the California ISO grid due to facilities interconnecting to adjacent grids not operated by California ISO (California ISO 2002a).
- The California ISO/FERC (Federal Energy Regulatory Commission) Electric Tariff provides guidelines for construction of all transmission additions/upgrades within the grid controlled by California ISO. The California ISO determines the need for the proposed project where it will promote economic efficiency or maintain system reliability. The California ISO also determines the cost responsibility of the proposed project and provides an operational review of all facilities that are to be connected to the California ISO grid (California ISO 2003a).

PROJECT DESCRIPTION AND INTERCONNECTION FACILITIES

The Huntington Beach Energy Project would be a natural-gas-fired, combined-cycle generating facility that would be located in the city of Huntington Beach, Orange County, California. The HBEP would consist of two power blocks. Each power block has three combustion turbine-generators (CTG) and one steam turbine generator (STG). Each CTG is expected to generate 114 megawatts (MW) and the STG is expected to generate 145 MW under average ambient conditions. A total of six CTGs and two STGs would generate a maximum output of 974 MW. With the generator auxiliary load of approximately 35 MW, the net output of the HBEP to the transmission grid would be 939 MW. The HBEP would be interconnected to the SCE Huntington Beach Switching Station. The proposed commercial operation date of the HBEP power block 1 is third quarter 2018 and the power block 2 is second quarter 2020.

The combustion turbine generators are each rated at 119.8 Megavolt Ampere (MVA) with a power factor of 0.95, and the steam turbine generators each rated at 152.8 MVA with a power factor of 0.95. For power block 1, combustion turbine generators unit 1, unit 2, and unit 3 would each be connected through their own 8,000-ampere generator circuit breaker through a short 5,000-ampere isolated phase bus duct to the low sides of its dedicated 73/96/120 MVA generator step-up (13.8/230 kV) transformer. The steam turbine generator unit 1 would be connected through its own 8,000-ampere generator circuit breaker via a short 7,000-ampere isolated phase bus duct to the low side of its dedicated 73/96/120 MVA generator step-up (13.8/230 kV) transformer. The high side of each generator step-up transformer would be connected to the project switchyard through a 600-ampere disconnect switch and overhead conductors.

The auxiliary load, approximately 17.5 MW for power block 1, would be provided by CTG unit 2 and STG unit 1, through its dedicated 500-ampere isolated phase bus ducts and their dedicated back-fed step-down (13.8/4.16 kV) transformers. The high sides of the transformers would each be connected through their dedicated 600-ampere disconnect switches to the common generator tie bus. A single 230 kV generator tie-line would connect power block 1 through a 2,000-ampere circuit breaker and a 2,000-ampere motor-operated disconnect switch to the SCE 230 kV Huntington Beach Switching Station via 1033.5 ACSS overhead generator tie-line which is approximately 0.22 mile long.

For power block 2, combustion turbine generators unit 4, unit 5, unit 6, and steam turbine generator unit 2 would have the same ratings and similar arrangement as the CTGs and STG of the power block 1. The auxiliary load for power block 2 would be provided by CTG unit 5 and STG unit 2. The high sides of the transformers would each be connected through their dedicated 600-ampere disconnect switches to the common generator tie bus. A single 230 kV generator tie-line would connect power block 2 through a 2,000-ampere circuit breaker and a 2,000-ampere motor-operated disconnect switch to the SCE 230 kV Huntington Beach Switching Station via 1033.5 ACSS overhead generator tie-line which is approximately 0.16 mile long.

The two 230 kV generator tie-lines, supported by single-circuit steel structures, would be built with 1033.5 kcmil ACSS conductor. The generator tie-lines would leave the project switchyard connected to the Huntington Beach Switching Station. (HBEP 2012a, HBEP 2012c section 1, section 2, section 3, Figure 2.1-4R, Figure 3.1-1R, Figure 3.1-2R).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

For the interconnection of a proposed generating unit or transmission facility to the grid, the interconnecting utility (SCE in this case) and the control area operator (California ISO) are responsible for ensuring grid reliability. These entities determine the transmission system impacts of the proposed project, and any mitigation measures needed to ensure system conformance with performance levels required by utility reliability criteria, NERC planning standards, WECC reliability criteria, and California ISO reliability criteria. The Phase I and Phase II Interconnection Studies are used to determine the impacts of the proposed project on the transmission grid. Staff relies on these studies and any review conducted by the California ISO to determine the project’s effect on the transmission grid and to identify any necessary downstream facilities or indirect project impacts required to bring the transmission network into compliance with applicable reliability standards.

The Phase I and Phase II Interconnection Studies analyze the grid with and without the proposed project under conditions specified in the planning standards and reliability criteria. The standards and criteria define the assumptions used in the study and establish the thresholds through which grid reliability is determined. The studies must analyze the impact of the project for the first year of operation and thus are based on a forecast of loads, generation, and transmission. Load forecasts are developed by the interconnecting utility and the California ISO. Generation and transmission forecasts are established by an interconnection queue. The studies are focused on thermal overloads, voltage deviations, system stability (excessive oscillations in generators and transmission system, voltage collapse, loss of loads, or cascading outages), and short circuit duties.

If the Phase I and Phase II Interconnection Studies show that the interconnection of the project causes the grid to be out of compliance with reliability standards, then the studies will identify mitigation alternatives or ways in which the grid could be brought into compliance with reliability standards. When a project connects to the grid controlled by California ISO, both the studies and mitigation alternatives must be reviewed and approved by the California ISO. If the mitigation identified by California ISO or interconnecting utility includes transmission modifications or additions that require CEQA review as part of the “whole of the action,” the Energy Commission must analyze the environmental impacts of these modifications or additions.

SCOPE OF CLUSTER PHASE I AND PHASE II INTERCONNECTION STUDIES

As stated in the Application for Certification, the HBEP filed for an interconnection study in March 2012. The California ISO has not completed the Cluster Phase I or Phase II Interconnection Study.

CEQA requires the analysis of reasonably foreseeable consequences of proposed projects based on the best available information. The California ISO is the reliability authority for generator interconnections and its Cluster Phase I and Phase II Interconnection Studies for the HBEP provide the best available information on the reliability impacts of the proposed project. Without these studies, it is not possible to determine the impacts of the proposed project on the SCE and neighboring transmission systems.

CUMULATIVE IMPACTS

The TSE analysis focuses on whether or not a proposed project will meet required codes and standards. At all times the transmission grid must remain in compliance with reliability standards, whether one project or many projects interconnect. Potential cumulative impacts on the transmission network are identified through the California ISO and utility generator interconnection process. In cases where a significant number of proposed generation projects could affect a particular portion of the transmission grid, the interconnecting utility or the California ISO can study the cluster of projects in order to identify the most efficient means to interconnect all of the proposed projects.

COMPLIANCE WITH LORS

The proposed interconnecting facilities include the HBEP 230 kV switchyard, two 230 kV overhead generator tie-lines, and the termination at the SCE Huntington Beach Switching Station. Since the Phase I and Phase II Interconnection Studies are not available, staff cannot not determine whether the proposed interconnecting facilities are adequate and in accordance with industry standards and good utility practices, and are acceptable to staff according to engineering LORS.

Staff's proposed conditions of certification TSE-1 through TSE-5 would help ensure that construction and operation of the transmission facilities for the proposed HBEP would comply with applicable LORS:

1. Staff proposed Condition of Certification TSE-1 to ensure that the preliminary equipment is in place for construction of the transmission facilities of the proposed project to comply with applicable LORS.
2. Staff proposed Condition of Certification TSE-2 to ensure the final design of the proposed transmission facilities would comply with applicable LORS.
3. Staff proposed Condition of Certification TSE-3 to ensure that the proposed project would be properly interconnected to the transmission grid. TSE-3 also ensures that the generator output would be properly delivered to the transmission system.
4. Staff proposed Condition of Certification TSE-4 to ensure that the project would synchronize with the existing transmission system and the operation of the facilities would comply with applicable LORS.
5. Staff proposed Condition of Certification TSE-5 to ensure that the proposed project has been built to required specifications and the operation of the facilities would comply with applicable LORS.

CONCLUSIONS AND RECOMMENDATIONS

The California ISO Queue Cluster Phase I or Phase II Interconnection Study is not available for staff to review at this time. The Phase I or Phase II Study is required for staff to determine the potential need for downstream transmission facilities. Without the

Phase I or Phase II Study, staff cannot determine if the proposed interconnection facilities including the HBEP 230 kV switchyard, two 230 kV overhead generator tie-lines, and the termination at the SCE Huntington Beach Switching Station are adequate and in accordance with industry standards and good utility practices. Staff cannot determine if the HBEP is acceptable according to engineering LORS.

In addition, if the study shows the project would cause any transmission line overloads which might require transmission line reconductoring or other significant downstream upgrades, a general CEQA analysis will be required. The environmental analysis of potential upgrades could cause a delay in the licensing process for the Huntington Beach Energy Project.

PROPOSED CONDITIONS OF CERTIFICATION

TSE-1 The project owner shall furnish to the CPM and to the CBO a schedule of transmission facility design submittals, a Master Drawing List, a Master Specifications List, and a Major Equipment and Structure List. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major structures and equipment. To facilitate audits by Energy Commission staff, the project owner shall provide designated packages to the CPM when requested.

Verification: Prior to the start of construction of transmission facilities, the project owner shall submit the schedule, a Master Drawing List, and a Master Specifications List to the CBO and to the CPM. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major structures and equipment (see list of major equipment in **Table 1:** Major Equipment List below). Additions and deletions shall be made to the table only with CPM and CBO approval. The project owner shall provide schedule updates in the monthly compliance report.

Table 1: Major Equipment List

Breakers
Step-up transformer
Switchyard
Busses
Surge arrestors
Disconnects
Take-off facilities
Electrical control building
Switchyard control building
Transmission pole/tower
Grounding system

TSE-2 For the power plant switchyard, outlet line and termination, the project owner shall not begin any construction until plans for that increment of construction have been approved by the CBO. These plans, together with design changes and design change notices, shall remain on the site for one year after completion of construction. The project owner shall request that the CBO inspect the installation to ensure compliance with the requirements of applicable LORS. The following activities shall be reported in the monthly compliance report:

a) receipt or delay of major electrical equipment;

b) testing or energization of major electrical equipment; and

c) the number of electrical drawings approved, submitted for approval, and still to be submitted.

Verification: Prior to the start of each increment of construction, the project owner shall submit to the CBO for review and approval the final design plans, specifications and calculations for equipment and systems of the power plant switchyard, outlet line, and termination, including a copy of the signed and stamped statement from the responsible electrical engineer verifying compliance with all applicable LORS, and send the CPM a copy of the transmittal letter in the next monthly compliance report.

TSE-3 The project owner shall ensure that the design, construction, and operation of the proposed transmission facilities will conform to all applicable LORS, and the requirements listed below. The project owner shall submit the required number of copies of the design drawings and calculations, as determined by the CBO. Once approved, the project owner shall inform the CPM and CBO of any anticipated changes to the design, and shall submit a detailed description of the proposed change and complete engineering, environmental, and economic rationale for the change to the CPM and CBO for review and approval.

a) The power plant outlet line shall meet or exceed the electrical, mechanical, civil, and structural requirements of CPUC General Order 95 or National Electric Safety Code (NESC); Title 8 of the California Code and Regulations (Title 8); Articles 35, 36 and 37 of the *High Voltage Electric Safety Orders*, California ISO standards, National Electric Code (NEC) and related industry standards.

b) Breakers and busses in the power plant switchyard and other switchyards, where applicable, shall be sized to comply with a short-circuit analysis.

c) Outlet line crossings and line parallels with transmission and distribution facilities shall be coordinated with the transmission line owner and comply with the owner's standards.

d) The project conductors shall be sized to accommodate the full output of the project.

e) Termination facilities shall comply with applicable SCE interconnection standards.

f) The project owner shall provide to the CPM:

   i) Special Protection System (SPS) sequencing and timing if applicable,

   ii) A letter stating that the mitigation measures or projects selected by the transmission owners for each reliability criteria violation, for which the project is responsible, are acceptable,

iii) A copy of the executed LGIA signed by the California ISO and the project owner and approved by the Federal Energy Regulatory Commission.

Verification: Prior to the start of construction or start of modification of transmission facilities, the project owner shall submit to the CBO for approval:

a) Design drawings, specifications, and calculations conforming with CPUC General Order 95 or National Electric Safety Code (NESC); Title 8 of the California Code and Regulations (Title 8); Articles 35, 36 and 37 of the *High Voltage Electric Safety Orders*, CA ISO standards, National Electric Code (NEC) and related industry standards, for the poles/towers, foundations, anchor bolts, conductors, grounding systems, and major switchyard equipment;

b) For each element of the transmission facilities identified above, the submittal package to the CBO shall contain the design criteria, a discussion of the calculation method(s), a sample calculation based on "worst case conditions"[1] and a statement signed and sealed by the registered engineer in responsible charge, or other acceptable alternative verification, that the transmission element(s) will conform with CPUC General Order 95 or National Electric Safety Code (NESC); Title 8 of the California Code and Regulations (Title 8); Articles 35, 36 and 37 of the *High Voltage Electric Safety Orders*, California ISO standards, National Electric Code (NEC), and related industry standards;

c) Electrical one-line diagrams signed and sealed by the registered professional electrical engineer in charge, a route map, and an engineering description of the equipment and configurations covered by requirements **TSE-3** a) through f);

d) Special Protection System (SPS) sequencing and timing if applicable shall be provided concurrently to the CPM.

e) A letter stating that the mitigation measures or projects selected by the transmission owners for each reliability criteria violation, for which the project is responsible, are acceptable,

f) A copy of the executed LGIA signed by the California ISO and the project owner and approved by the Federal Energy Regulatory Commission.

Prior to the start of construction of or modification of transmission facilities, the project owner shall inform the CBO and the CPM of any anticipated changes to the design that are different from the design previously submitted and approved and shall submit a detailed description of the proposed change and complete engineering, environmental, and economic rationale for the change to the CPM and CBO for review and approval.

TSE-4 The project owner shall provide the following Notice to the California Independent System Operator (California ISO) prior to synchronizing the facility with the California Transmission system:

[1] Worst-case conditions for the foundations would include for instance, a dead-end or angle pole.

1. At least one week prior to synchronizing the facility with the grid for testing, provide the California ISO a letter stating the proposed date of synchronization; and
2. At least one business day prior to synchronizing the facility with the grid for testing, provide telephone notification to the California ISO Outage Coordination Department.

Verification: The project owner shall provide copies of the California ISO letter to the CPM when it is sent to the California ISO one week prior to initial synchronization with the grid. The project owner shall contact the California ISO Outage Coordination Department, Monday through Friday, between the hours of 0700 and 1530 at (916) 351-2300 at least one business day prior to synchronizing the facility with the grid for testing. A report of conversation with the California ISO shall be provided electronically to the CPM one day before synchronizing the facility with the California transmission system for the first time.

TSE-5 The project owner shall be responsible for the inspection of the transmission facilities during and after project construction, and any subsequent CPM and CBO approved changes thereto, to ensure conformance with CPUC GO-95 or NESC, Title 8, CCR, Articles 35, 36 and 37 of the “High Voltage Electric Safety Orders”, applicable interconnection standards, NEC and related industry standards. In case of non-conformance, the project owner shall inform the CPM and CBO in writing, within 10 days of discovering such non-conformance and describe the corrective actions to be taken.

Verification: Within 60 days after first synchronization of the project, the project owner shall transmit to the CPM and CBO:

a) “As built” engineering description(s) and one-line drawings of the electrical portion of the facilities signed and sealed by the registered electrical engineer in responsible charge. A statement attesting to conformance with CPUC GO-95 or NESC, Title 8, California Code of Regulations, Articles 35, 36 and 37 of the “High Voltage Electric Safety Orders”, and applicable interconnection standards, NEC, related industry standards.

b) An “as built” engineering description of the mechanical, structural, and civil portion of the transmission facilities signed and sealed by the registered engineer in responsible charge or acceptable alternative verification. “As built” drawings of the electrical, mechanical, structural, and civil portion of the transmission facilities shall be maintained at the power plant and made available, if requested, for CPM audit as set forth in the “Compliance Monitoring Plan”.

c) A summary of inspections of the completed transmission facilities, and identification of any nonconforming work and corrective actions taken, signed and sealed by the registered engineer in charge.

REFERENCES

California ISO (Independent System Operator). 1998a. California ISO Tariff Scheduling Protocol posted April 1998, Amendments 1,4,5,6, and 7 incorporated.

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DEFINITION OF TERMS

AAC	All aluminum conductor.
ACSR	Aluminum conductor steel-reinforced.
ACSS	Aluminum conductor steel-supported.
Ampacity	Current-carrying capacity, expressed in amperes, of a conductor at specified ambient conditions, at which damage to the conductor is nonexistent or deemed acceptable based on economic, safety, and reliability considerations.
Ampere	The unit of current flowing in a conductor.
Bundled	Two wires, 18 inches apart.
Bus	Conductors that serve as a common connection for two or more circuits.
Conductor	The part of the transmission line (the wire) that carries the current.
Congestion management	A scheduling protocol, which provides that dispatched generation and transmission loading (imports) will not violate criteria.
Double–contingency condition	Also known as emergency or N-2 condition, a forced outage of two system elements usually (but not exclusively) caused by one single event. Examples of an N-2 contingency include loss of two transmission circuits on a single tower line or loss of two elements connected by a common circuit breaker due to the failure of that common breaker.
Emergency overload	See single–contingency condition. This is also called an N-1 condition.
kcmil	One-thousand circular mil. A unit of the conductor's cross-sectional area divided by 1,273 to obtain the area in square inches.
Kilovolt (kV)	A unit of potential difference, or voltage, between two conductors of a circuit, or between a conductor and the ground.
Loop	An electrical cul-de-sac. A transmission configuration that interrupts an existing circuit, diverts it to another connection, and returns it back to the interrupted circuit, thus forming a loop or cul-de-sac.
Megavar	One megavolt ampere reactive.
Megavars	Mega-volt-ampere-reactive. One million volt-ampere-reactive. Reactive power is generally associated with the reactive nature of motor loads that must be fed by generation units in the system.
Megavolt ampere (MVA)	A unit of apparent power equal to the product of the line voltage in kilovolts, current in amperes, the square root of 3, and divided by 1000.
Megawatt (MW)	A unit of power equivalent to 1,341 horsepower.

N-0 condition	See normal operation/normal overload.
Normal operation/normal overload (N-0)	When all customers receive the power they are entitled to without interruption and at steady voltage, and no element of the transmission system is loaded beyond its continuous rating.
N-1 condition	See single–contingency condition.
N-2 condition	See double–contingency condition.
Outlet	Transmission facilities (e.g., circuit, transformer, circuit breaker) linking generation facilities to the main grid.
Power flow analysis	A power flow analysis is a forward-looking computer simulation of essentially all generation and transmission system facilities that identifies overloaded circuits, transformers, and other equipment and system voltage levels.
Reactive power	Reactive power is generally associated with the reactive nature of motor loads that must be fed by generation units in the system. An adequate supply of reactive power is required to maintain voltage levels in the system.
Remedial action scheme (RAS)	A remedial action scheme is an automatic control provision, which, for instance, will trip a selected generating unit upon a circuit overload.
SF6	Sulfur hexafluoride is an insulating medium.
Single–contingency condition	Also known as emergency or N-1 condition, occurs when one major transmission element (e.g., circuit, transformer, circuit breaker) or one generator is out of service.
Solid dielectric cable	Copper or aluminum conductors that are insulated by solid polyethylene-type insulation and covered by a metallic shield and outer polyethylene jacket.
Special protection scheme/system (SPS)	An SPS detects a transmission outage (either a single or credible multiple contingency) or an overloaded transmission facility and then trips or runs back generation output to avoid potential overloaded facilities or other criteria violations.
Switchyard	A power plant switchyard is an integral part of a power plant and is used as an outlet for one or more electric generators.
Thermal rating	See ampacity.
TSE	Transmission System Engineering.
Tap	A transmission configuration creating an interconnection through a sort single circuit to a small- or medium-sized load or generator. The new single circuit line is inserted into an existing circuit by

	using breakers at existing terminals of the circuit, rather than installing breakers at the interconnection in a new switchyard.
Undercrossing	A transmission configuration where a transmission line crosses below the conductors of another transmission line, generally at 90 degrees.
Underbuild	A transmission or distribution configuration where a transmission or distribution circuit is attached to a transmission tower or pole below (under) the principle transmission line conductors.

COMPLIANCE CONDITIONS
AND
COMPLIANCE MONITORING PLAN

Eric Veerkamp

INTRODUCTION

The Huntington Beach Energy Project's **Compliance** Conditions of Certification, including a Compliance Monitoring Plan (Compliance Plan), are established as required by Public Resources Code section 25532. The Compliance Plan provides a means for assuring that the facility is constructed, operated, and closed in compliance with public health and safety and environmental law; all other applicable laws, ordinances, regulations, and standards (LORS); and the conditions adopted by the Energy Commission and specified in the Commission's written Decision on the project's Application for Certification, or otherwise required by law.

The Compliance Plan is composed of elements that:

- set forth the duties and responsibilities of the compliance project manager (CPM), the project owner or operator (project owner), delegate agencies, and others;
- set forth the requirements for handling confidential records and maintaining the compliance record;
- state procedures for settling disputes and making post-certification changes;
- state the requirements for periodic compliance reports and other administrative procedures that are necessary to verify the compliance status for all Energy Commission-approved conditions of certification;
- establish contingency planning, facility non-operation protocols, and closure requirements; and
- establish a tracking method for the technical area conditions of certification that contain measures required to mitigate potentially adverse project impacts associated with construction, operation, and closure below a level of significance; each technical condition of certification also includes one or more verification provisions that describe the means of assuring that the condition has been satisfied.

KEY PROJECT EVENT DEFINITIONS

The following terms and definitions help determine when various conditions of certification are implemented.

Project Certification

Project certification occurs on the day the Energy Commission dockets its Decision after adopting it at a publically noticed Business Meeting or hearing. At that time, all Energy Commission conditions of certification become binding on the project owner and the proposed facility.

Site Assessment and Pre-Construction Activities

The below-listed site assessment and pre-construction activities may be initiated or completed prior to the start of construction, subject to the CPM's approval of the specific site assessment or pre-construction activities.

Site assessment and pre-construction activities include the following, but only to the extent the activities are minimally disruptive to soil and vegetation and shall not affect listed or special-status species or other sensitive resources:

1. the installation of environmental monitoring equipment;
2. a minimally invasive soil or geological investigation;
3. a topographical survey;
4. any other study or investigation to determine the environmental acceptability or feasibility of the use of the site for any particular facility; and
5. any minimally invasive work to provide safe access to the site for any of the purposes specified in 1-4, above.

Site Mobilization and Construction

When a condition of certification requires the project owner to take an action or obtain CPM approval prior to the start of construction, or within a period of time relative to the start of construction, that action must be taken, or approval must be obtained, prior to any site mobilization or construction activities, as defined below.

Site mobilization and construction activities are those necessary to provide site access for construction mobilization and facility installation, including both temporary and permanent equipment and structures, as determined by the CPM.

Site mobilization and construction activities include, but are not limited to:

1. ground disturbance activities like grading, boring, trenching, leveling, mechanical clearing, grubbing, and scraping;
2. site preparation activities, such as access roads, temporary fencing, trailer and utility installation, construction equipment installation and storage, equipment and supply laydown areas, borrow and fill sites, temporary parking facilities, and chemical spraying and controlled burns; and
3. permanent installation activities for all facility and linear structures, including access roads, fencing, utilities, parking facilities, equipment storage, mitigation and landscaping activities, and other installations, as applicable.

System Commissioning and Decommissioning

Commissioning activities are designed to test the functionality of a facility's installed components and systems to ensure safe and reliable operation. Although decommissioning is often synonymous with facility closure, specific decommissioning activities also systematically test the removal of such systems to ensure a facility's safe closure. For compliance monitoring purposes, commissioning examples include interface connection and utility pre-testing, “cold” and “hot” electrical testing, system pressurization and optimization tests, grid synchronization, and combustion turbine “first fire.” Decommissioning activity examples include utility shut down, system depressurization and de-electrification, structure removal, and site reclamation.

Start of Commercial Operation

For compliance monitoring purposes, “commercial operation” or “operation” begins once commissioning activities are complete, the certificate of occupancy has been issued, and the power plant has reached reliable steady-state electrical production. At the start of commercial operation, plant control is usually transferred from the construction manager to the plant operations manager. Operation activities can include a steady state of electrical production, or, for “peaker plants,” a seasonal or on-demand operational regime to meet peak load demands.

Non-Operation and Closure

Non-operation is time-limited and can encompass part or all of a facility. Non-operation can be a planned event, usually for minor equipment maintenance or repair, or unplanned, usually the result of unanticipated events or emergencies.

Closure is a facility shutdown with no intent to restart operation. It may also be the cumulative result of unsuccessful efforts to re-start over an increasingly lengthy period of non-operation, condemned by inadequate means and/or lack of a viable plan. Facility closures can occur due to a variety of factors, including, but not limited to, irreparable damage and/or functional or economic obsolescence.

ROLES AND RESPONSIBILITIES

Provided below is a generalized description of the compliance roles and responsibilities for Energy Commission staff (staff) and the project owner for the construction and operation of the Huntington Beach Energy Project.

COMPLIANCE PROJECT MANAGER RESPONSIBILITIES

The CPM’s compliance monitoring and project oversight responsibilities include:

1. ensuring that the design, construction, operation, and closure of the project facilities are in compliance with the terms and conditions of the Decision;
2. resolving complaints;
3. processing post-certification project amendments for changes to the project description, conditions of certification, ownership or operational control, and requests for extension of the deadline for the start of construction (see COM-10 for instructions on filing a Petition to Amend or to extend a construction start date);
4. documenting and tracking compliance filings; and
5. ensuring that compliance files are maintained and accessible.

The CPM is the central contact person for the Energy Commission during project pre-construction, construction, emergency response, operation, and closure. The CPM shall consult with the appropriate responsible parties when handling compliance issues, disputes, complaints, and amendments.

All project compliance submittals are submitted to the CPM for processing. Where a submittal requires CPM approval, the approval shall involve appropriate Energy Commission technical staff and management. All submittals must include searchable electronic versions (.pdf, MS Word, or equivalent files).

Pre-Construction and Pre-Operation Compliance Meeting

The CPM usually schedules pre-construction and pre-operation compliance meetings prior to the projected start-dates of construction, plant operation, or both. These meetings are used to assist the Energy Commission and the project owner's technical staff in the status review of all required pre-construction or pre-operation conditions of certification, and take proper action if outstanding conditions remain. In addition, these meetings ensure, to the extent possible, that the Energy Commission's conditions of certification do not delay the construction and operation of the plant due to last-minute unforeseen issues or a compliance oversight. Pre-construction meetings held during the certification process must be publicly noticed unless they are confined to administrative issues and processes.

Energy Commission Record

The Energy Commission maintains the following documents and information as public records, in either the Compliance files or Dockets files, for the life of the project (or other period as specified):

- all documents demonstrating compliance with any legal requirements relating to the construction, operation, and closure of the facility;
- all Monthly and Annual Compliance Reports (MCRs, ACRs) filed by the project owner;
- all project-related complaints of alleged noncompliance filed with the Energy Commission; and
- all petitions for project or condition of certification changes and the resulting staff or Energy Commission action.

CHIEF BUILDING OFFICIAL DELEGATION AND AGENCY COOPERATION

Under the California Building Code Standards, while monitoring project construction and operation, staff acts as, and has the authority of, the Chief Building Official (CBO). Staff may delegate some CBO responsibility to either an independent third-party contractor or a local building official. However, staff retains CBO authority when selecting a delegate CBO, including the interpretation and enforcement of state and local codes and the use of discretion, as necessary, in implementing the various codes and standards.

The delegate CBO will also be responsible to facilitate compliance with all environmental conditions of certification, including cultural resources, and the implementation of all appropriate codes and standards and Energy Commission requirements. The CBO will conduct on-site (including linear facilities) reviews and inspections at intervals necessary to fulfill those responsibilities. The project owner will pay all delegate CBO fees necessary to cover the costs of these reviews and inspections.

PROJECT OWNER RESPONSIBILITIES

The project owner is responsible for ensuring that all conditions of certification in the Huntington Beach Energy Project Decision are satisfied. The project owner shall submit all compliance submittals to the CPM for processing unless the conditions specify another recipient. The **Compliance** Conditions regarding post-certification changes specify measures that the project owner must take when modifying the project's design, operation, or performance requirements, or to transfer ownership or operational control. Failure to comply with any of the conditions of certification may result in a correction order, an administrative fine, certification revocation, or any combination thereof, as appropriate. A summary of the **Compliance** Conditions of Certification are included as **Compliance Conditions Table 1** at the end of this Compliance Plan.

COMPLIANCE ENFORCEMENT

The Energy Commission's legal authority to enforce the terms and conditions of its Decision are specified in Public Resources Code sections 25534 and 25900. The Energy Commission may amend or revoke a project certification and may impose a civil penalty for any significant failure to comply with the terms or conditions of the Decision. The Energy Commission's actions and fine assessments would take into account the specific circumstances of the incident(s).

PERIODIC COMPLIANCE REPORTING

Many of the conditions of certification require submittals in the MCRs and ACRs. All compliance submittals assist the CPM in tracking project activities and monitoring compliance with the terms and conditions of the Huntington Beach Energy Project Decision. During construction, the project owner or an authorized agent shall submit compliance reports on a monthly basis. During operation, compliance reports are submitted annually, except as otherwise required. These reports and the requirements for an accompanying compliance matrix are described below.

NONCOMPLIANCE COMPLAINT PROCEDURES

Any person or agency may file a complaint alleging noncompliance with the conditions of certification. Such a complaint shall be subject to review by the Energy Commission pursuant to Title 20, California Code of Regulations, section 1237, but, in many instances, the issue(s) can be resolved by using an informal dispute resolution process. Both the informal and formal complaint procedures, as described in current state law and regulations, are summarized below. Energy Commission staff shall follow these provisions unless superseded by future law or regulations. The California Office of Administrative Law provides on-line access to the California Code of Regulations at http://www.oal.ca.gov/.

Informal Dispute Resolution Process

The following informal procedure is designed to resolve code and compliance interpretation disputes stemming from the project's conditions of certifications and other

LORS. The project owner, the Energy Commission, or any other party, including members of the public, may initiate the informal dispute resolution process. Disputes may pertain to actions or decisions made by any party, including the Energy Commission's delegate agents.

This process may precede the formal complaint and investigation procedure specified in Title 20, California Code of Regulations, section 1237, but is not intended to be a prerequisite or substitute for it. This informal procedure may not be used to change the terms and conditions of certification in the Decision, although the agreed-upon resolution may result in a project owner proposing an amendment. The informal dispute resolution process encourages all parties to openly discuss the conflict and reach a mutually agreeable solution. If a dispute cannot be resolved, then the matter must be brought before the full Energy Commission for consideration via the complaint and investigation procedure specified in Title 20, California Code of Regulations, section 1237.

Request for Informal Investigation

Any individual, group, or agency may request that the CPM conduct an informal investigation of alleged noncompliance with the Energy Commission's conditions of certification. Upon receipt of an informal investigation request, the CPM shall promptly provide both verbal and written notification to the project owner of the allegation(s), along with all known and relevant information of the alleged noncompliance. The CPM shall evaluate the request and, if the CPM determines that further investigation is necessary, shall ask the project owner to promptly conduct a formal inquiry into the matter and provide within seven days a written report of the investigation results, along with corrective measures proposed or undertaken. Depending on the urgency of the matter, the CPM may conduct a site visit and/or request that the project owner provide an initial verbal report within 48 hours.

Request for Informal Meeting

In the event that either the requesting party or Energy Commission staff are not satisfied with the project owner's investigative report or corrective measures, either party may submit a written request to the CPM for a meeting with the project owner. The request shall be made within 14 days of the project owner's filing of the required investigative report. Upon receipt of such a request, the CPM shall attempt to:

1. immediately schedule a meeting with the requesting party and the project owner, to be held at a mutually convenient time and place;
2. secure the attendance of appropriate Energy Commission staff and staff of any other agencies with expertise in the subject area of concern, as necessary; and
3. conduct the meeting in an informal and objective manner so as to encourage the voluntary settlement of the dispute in a fair and equitable manner.

After the meeting, the CPM shall promptly prepare and distribute copies to all parties, and to the project file, of a summary memorandum that fairly and accurately identifies the positions of all parties and any understandings reached. If no agreement was reached, the CPM shall direct the complainant to the formal complaint process provided under Title 20, California Code of Regulations, section 1237.

Formal Dispute Resolution Procedure

Any person may file a complaint with the Energy Commission's Dockets Unit alleging noncompliance with a Commission Decision adopted pursuant to Public Resources Code section 25500. Requirements for complaint filings and a description of how complaints are processed are provided in Title 20, California Code of Regulations, section 1237.

POST-CERTIFICATION CHANGES TO THE ENERGY COMMISSION DECISION

The project owner must petition the Energy Commission pursuant to Title 20, California Code of Regulations, section 1769, to modify the design, operation, or performance requirements of the project and/or the linear facilities, or to transfer ownership or operational control of the facility. **It is the responsibility of the project owner to contact the CPM to determine if a proposed project change should be considered a project modification pursuant to section 1769.** Implementation of a project modification without first securing Energy Commission approval may result in an enforcement action including civil penalties in accordance with Public Resources Code, section 25534.

Below is a summary of the criteria for determining the type of approval process required, reflecting the provisions of Title 20, California Code of Regulations, section 1769, at the time this Compliance Plan was drafted. If the Energy Commission modifies this regulation, the language in effect at the time of the requested change shall apply. Upon request, the CPM can provide sample formats of these submittals.

Amendment

The project owner shall submit a Petition to Amend the Energy Commission Decision, pursuant to Title 20, California Code of Regulations, section 1769 (a), when proposing modifications to the design, operation, or performance requirements of the project and/or the linear facilities. If a proposed modification results in an added, changed, or deleted condition of certification, or makes changes causing noncompliance with any applicable LORS, the petition shall be processed as a formal amendment to the Decision, triggering public notification of the proposal, public review of the Energy Commission staff's analysis, and consideration of approval by the full Energy Commission.

Change of Ownership and/or Operational Control

Change of ownership or operational control also requires that the project owner file a petition pursuant to section 1769 (b). This process requires public notice and approval by the full Commission. The petition shall be in the form of a legal brief and fulfill the requirements of section 1769 (b).

Staff-Approved Project Modification

Modifications that do not result in additions, deletions, or changes to the conditions of certification, that are compliant with the applicable LORS, and that shall not have significant environmental impacts, may be authorized by the CPM as a staff-approved project modification pursuant to section 1769 (a) (2). Once the CPM files a Notice of Determination of the proposed project modifications, any person may file an objection to the CPM's determination within 14 days of service on the grounds that the modification does not meet the criteria of section 1769 (a) (2). If there is a valid objection to the CPM's determination, the petition must be processed as a formal amendment to the Decision and must be considered for approval by the full Commission at a publically noticed Business Meeting or hearing.

Verification Change

Each condition of certification (except for the **Compliance** Conditions) has one or more means of verifying the project owner's compliance with the provisions of the condition. These verifications specify the actions and deadlines by which a project owner demonstrates compliance with the Energy Commission-adopted conditions. A verification may be modified by the CPM without requesting a Decision amendment if the change does not conflict with any condition of certification, does not violate any LORS, and provides an effective alternative means of verification.

EMERGENCY RESPONSE CONTINGENCY PLANNING AND INCIDENT REPORTING

To protect public health and safety and environmental quality, the conditions of certification include contingency planning and incident reporting requirements to ensure compliance with necessary health and safety practices. A well-drafted contingency plan avoids or limits potential hazards and impacts resulting from serious incidents involving personal injury, hazardous spills, flood, fire, explosions or other catastrophic events and ensures a comprehensive timely response. All such incidents must be reported immediately to the CPM and documented. These requirements are designed to build from "lessons learned" limit the hazards and impacts, anticipate and prevent recurrence, and provide for the safe and secure shutdown and re-start of the facility.

FACILITY CLOSURE

The Energy Commission cannot reasonably foresee all potential circumstances in existence when a facility permanently closes. Therefore, the closure conditions provided herein strive for the flexibility to address circumstances that may exist at some future time. Most importantly, facility closure must be consistent with all applicable Energy Commission conditions of certification and the LORS in effect at that time.

Although a non-operational facility may intend to resume operations, if it remains non-operational for longer than one year and the project owner does not present a viable plan to resume operation, the Energy Commission can conclude that closure is imminent and direct the project owner to commence closure preparations. Should the project owner effectively abandon a facility, the Energy Commission can access the required financial assurance funds to begin closure, but the owner remains liable for all associated costs.

Prior to submittal of the facility's Final Closure Plan to the Energy Commission, the project owner and the CPM will hold a meeting to discuss the specific contents of the plan. In the event that significant issues are associated with the plan's approval, the CPM will hold one or more workshops and/or the Commission may hold public hearings as part of its approval procedure.

With the exception of measures to eliminate any immediate threats to public health and safety or to the environment, facility closure activities cannot be initiated until the Energy Commission approves the Final Closure Plan and Cost Estimate and the project owner complies with any requirements the Commission may incorporate as conditions of approval of the Final Closure Plan.

COMPLIANCE CONDITIONS OF CERTIFICATION

For the Huntington Beach Energy Project, staff proposes the **Compliance** Conditions of Certification below.

COM-1: **Unrestricted Access**. The project owner shall take all steps necessary to ensure that the CPM, responsible Energy Commission staff, and delegated agencies or consultants have unrestricted access to the facility site, related facilities, project-related staff, and the records maintained on-site to facilitate audits, surveys, inspections, and general or closure-related site visits. Although the CPM shall normally schedule site visits on dates and times agreeable to the project owner, the CPM reserves the right to make unannounced visits at any time, whether such visits are by the CPM in person or through representatives from Energy Commission staff, delegated agencies, or consultants.

COM-2: **Compliance Record.** The project owner shall maintain electronic copies of all project files and submittals on-site, or at an alternative site approved by the CPM, for the operational life and closure of the project. The files shall also contain at least one hard copy of:

1. the facility's Application(s) for Certification;
2. all amendment petitions and Energy Commission orders;
3. all site-related environmental impact and survey documentation;
4. all appraisals, assessments, and studies for the project;
5. all finalized original and amended structural plans and "as-built" drawings for the entire project;
6. all citations, warnings, violations, or corrective actions applicable to the project, and
7. the most current versions of any plans, manuals and training documentation required by the conditions of certification or applicable LORS.

Energy Commission staff and delegate agencies shall, upon request to the project owner, be given unrestricted access to the files maintained pursuant to this condition.

COM-3: **Compliance Verification Submittals.** Verification lead times associated with the start of construction or closure may require the project owner to file submittals during the AFC process, particularly if construction is planned to commence shortly after certification. The verification procedures, unlike the conditions, may be modified as necessary by the CPM.

A cover letter from the project owner or an authorized agent is required for all compliance submittals and correspondence pertaining to compliance matters. **The cover letter subject line shall identify the project by AFC number, cite the appropriate condition(s) of certification number(s), and give a brief description of the subject of the submittal**. When submitting supplementary or corrected information, the project owner shall reference the date of the previous submittal and the condition(s) of certification applicable.

All reports and plans required by the project's conditions of certification shall be submitted in a searchable electronic format (.pdf, MS Word, or Excel, etc.) and include standard formatting elements such as a table of contents, identifying by title and page number each section, table, graphic, exhibit, or addendum. All report and/or plan graphics and maps shall be adequately scaled and shall include a key with descriptive labels, directional headings, a bar scale, and the most recent revision date.

The project owner is responsible for the content and delivery of all verification submittals to the CPM, whether the actions required by the verification were satisfied by the project owner or an agent of the project owner. All submittals shall be accompanied by an electronic copy on an electronic storage medium, or by e-mail, as agreed upon by the CPM. If hard-copy submittals are required, please address as follows:

Compliance Project Manager
Huntington Beach Energy Project (12-AFC-02)
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814

COM-4: **Pre-Construction Matrix and Tasks Prior to Start of Construction.** Prior to start of construction, the project owner shall submit to the CPM a compliance matrix including only those conditions that must be fulfilled before the start of construction. The matrix shall be included with the project owner's first compliance submittal or prior to the first pre-construction meeting, whichever comes first, and shall be submitted in a format similar to the description below.

Site mobilization and construction activities shall not start until all of the following occur: the project owner has submitted the pre-construction matrix and all submittals required by compliance verifications pertaining to all pre-construction conditions of certification, and the CPM has issued an authorization-to-construct letter to the project owner. The deadlines for submitting various compliance verifications to the CPM allow sufficient staff time to review and comment on, and if necessary, allow the project owner to revise the submittal in a timely manner. These procedures help ensure that project construction proceeds according to schedule. Failure to submit required compliance documents by the specified deadlines may result in delayed authorizations to commence various stages of the project.

If the project owner anticipates site mobilization immediately following project certification, it may be necessary for the project owner to file compliance submittals prior to project certification. In these instances, compliance verifications can be submitted in advance of the required deadlines and the anticipated authorizations to start construction. The project owner must understand that submitting compliance verification requirements prior to these authorizations is <u>at the owner's own risk</u>. Any approval by Energy Commission staff prior to project certification is subject to change based upon the Commission Decision, or amendment thereto, and early staff compliance approvals do not imply that the Energy Commission will certify the project for actual construction and operation.

COM-5: **Compliance Matrix.** The project owner shall submit a compliance matrix to the CPM with each MCR and ACR. The compliance matrix provides the CPM with the status of all conditions of certification in a spreadsheet format. The compliance matrix shall identify:

1. the technical area (e.g., biological resources, facility design, etc.);
2. the condition number;
3. a brief description of the verification action or submittal required by the condition;
4. the date the submittal is required (e.g., sixty (60) days prior to construction, after final inspection, etc.);
5. the expected or actual submittal date;
6. the date a submittal or action was approved by the CBO, CPM, or delegate agency, if applicable;
7. the compliance status of each condition (e.g., "not started," "in progress," or "completed" (include the date); and
8. if the condition was amended, the updated language and the date the amendment was proposed or approved.

The CPM can provide a template for the compliance matrix upon request.

COM-6: **Monthly Compliance Reports and Key Events List.** The first MCR is due one (1) month following the docketing of the project's Decision unless otherwise agreed to by the CPM. The first MCR shall include the AFC number and an initial list of dates for each of the events identified on the Key Events List. (The Key Events List form is found at the end of this Compliance Plan).

During project pre-construction, construction, or closure, the project owner or authorized agent shall submit an electronic searchable version of the MCR within ten (10) business days after the end of each reporting month, unless otherwise specified by the CPM. MCRs shall be clearly identified for the month being reported. The searchable electronic copy may be filed on an electronic storage medium or by e-mail, subject to CPM approval. The compliance verification submittal condition provides guidance on report production standards, and the MCR shall contain, at a minimum:

1. a summary of the current project construction status, a revised/updated schedule if there are significant delays, and an explanation of any significant changes to the schedule;
2. documents required by specific conditions to be submitted along with the MCR; each of these items shall be identified in the transmittal letter, as well as the conditions they satisfy, and submitted as attachments to the MCR;
3. an initial, and thereafter updated, compliance matrix showing the status of all conditions of certification;
4. a list of conditions that have been satisfied during the reporting period, and a description or reference to the actions that satisfied the condition;
5. a list of any submittal deadlines that were missed, accompanied by an explanation and an estimate of when the information will be provided;
6. a cumulative listing of any approved changes to the conditions of certification;
7. a list of any filings submitted to, and permits issued by, other governmental agencies during the month;
8. a projection of project compliance activities scheduled during the next two months; the project owner shall notify the CPM as soon as any changes are made to the project construction schedule that would affect compliance with conditions of certification;
9. a list of the month's additions to the on-site compliance file; and
10. a listing of complaints, notices of violation, official warnings, and citations received during the month; a description of the actions taken to date to resolve the issues; and the status of any unresolved actions.

COM-7: **Annual Compliance Reports.** After construction is complete, the project owner must submit searchable electronic ACRs instead of MCRs. ACRs are due for each year of commercial operation and may be required for a specified period after decommissioning to monitor closure compliance, as specified by the CPM. The searchable electronic copies may be filed on an electronic storage medium or by e-mail, subject to CPM approval. Each ACR must include the AFC number, identify the reporting period, and contain the following:

1. an updated compliance matrix showing the status of all conditions of certification (fully satisfied conditions do not need to be included in the matrix after they have been reported as completed);
2. a summary of the current project operating status and an explanation of any significant changes to facility operations during the year;

3. documents required by specific conditions to be submitted along with the ACR; each of these items shall be identified in the transmittal letter with the condition it satisfies and submitted as an attachment to the ACR;
4. a cumulative list of all post-certification changes approved by the Energy Commission or the CPM;
5. an explanation for any submittal deadlines that were missed, accompanied by an estimate of when the information will be provided;
6. a list of filings submitted to, and permits issued by, other governmental agencies during the year;
7. a projection of project compliance activities scheduled during the next year;
8. a list of the year's additions to the on-site compliance file;
9. an evaluation of the Site Contingency Plan, including amendments and plan updates; and
10. a list of complaints, notices of violation, official warnings, and citations received during the year, a description of how the issues were resolved, and the status of any unresolved matters.

COM-8: **Confidential Information.** Any information that the project owner designates as confidential shall be submitted to the Energy Commission's Executive Director with an application for confidentiality, pursuant to Title 20, California Code of Regulations, section 2505(a). Any information deemed confidential pursuant to the regulations shall remain undisclosed, as provided in Title 20, California Code of Regulations, section 2501.

COM-9: **Annual Energy Facility Compliance Fee.** Pursuant to the provisions of section 25806 (b) of the Public Resources Code, the project owner is required to pay an annually adjusted compliance fee. Current compliance fee information is available on the Energy Commission's website at http://www.energy.ca.gov/siting/filing_fees.html. The project owner may also contact the CPM for the current fee information. The initial payment is due on the date the Energy Commission dockets its final Decision. All subsequent payments are due by July 1 of each year in which the facility retains its certification.

COM-10: **Amendments, Staff-Approved Project Modifications, Ownership Changes, and Verification Changes.** The project owner shall petition the Energy Commission, pursuant to Title 20, California Code of Regulations, section 1769, to modify the design, operation, or performance requirements of the project or linear facilities, or to transfer ownership or operational control of the facility. The CPM will determine whether staff approval will be sufficient, or whether Commission approval will be necessary. **It is the project owner's responsibility to contact the CPM to determine if a proposed project change triggers the requirements of section 1769.** Section 1769 details the required contents for a Petition to Amend an Energy Commission Decision. The only change that can be requested by means of a letter to the CPM is a request to change the verification method of a condition of certification.

Implementation of a project modification without first securing Energy Commission, or Energy Commission staff, approval, may result in an enforcement action, including civil penalties, in accordance with section 25534 of the Public Resources Code. If the Energy Commission's rules regarding amendments are revised, the rules in effect at the time the change is requested shall apply.

Com-11: Reporting of Complaints, Notices, and Citations. Prior to the start of construction or decommissioning, the project owner shall send a letter to property owners within one (1) mile of the project, notifying them of a telephone number to contact project representatives with questions, complaints, or concerns. If the telephone is not staffed twenty-four (24) hours per day, it shall include automatic answering with a date and time stamp recording.

The project owner shall respond to all recorded complaints within twenty-four (24) hours or the next business day. The project site shall post the telephone number on-site and make it easily visible to passersby during construction, operation, and closure. The project owner shall provide the contact information to the CPM who will post it on the Energy Commission's web page at http://www.energy.ca.gov/sitingcases/huntington_beach_energy/index.html. The project owner shall report any disruption to the contact system or telephone number change to the CPM promptly, to allow the CPM to update the Energy Commission's facility webpage accordingly.

In addition to including all complaints, notices, and citations included with the MCRs and ACRs, within ten (10) days of receipt, the project owner shall report, and provide copies to the CPM, of all complaints, including noise and lighting complaints, notices of violation, notices of fines, official warnings, and citations. Complaints shall be logged and numbered. Noise complaints shall be recorded on the form provided in the Noise and Vibration Conditions of Certification. All other complaints shall be recorded on the complaint form (Attachment A) at the end of this Compliance Plan.

COM-12: Emergency Response Site Contingency Plan. No less than sixty (60) days prior to the start of commercial operation (or other date agreed to by the CPM), the project owner shall submit for CPM review and approval, an Emergency Response Site Contingency Plan (Contingency Plan). The Contingency Plan shall evidence a facility's coordinated emergency response and recovery preparedness for a series of reasonably foreseeable emergency events. The CPM may require the updating of the Contingency Plan over the life of the facility. Contingency Plan elements include, but are not limited to:

1. a site-specific list and direct contact information for persons, agencies, and responders to be notified for an unanticipated event;

2. a detailed and labeled facility map, including all fences and gates, the windsock location (if applicable), the on- and off-site assembly areas, and the main roads and highways near the site;
3. a detailed and labeled map of population centers, sensitive receptors, and the nearest emergency response facilities;
4. a description of the on-site, first response and backup emergency alert and communication systems, site-specific emergency response protocols, and procedures for maintaining the facility's contingency response capabilities, including a detailed map of interior and exterior evacuation routes, and the planned location(s) of all permanent safety equipment;
5. an organizational chart including the name, contact information, and first aid/emergency response certification(s) and renewal date(s) for all personnel regularly on-site;
6. a brief description of reasonably foreseeable, site-specific incidents and accident sequences (on- and off-site), including response procedures and protocols and site security measures to maintain twenty-four-hour site security;
7. procedures for maintaining contingency response capabilities; and
8. the procedures and implementation sequence for the safe and secure shutdown of all non-critical equipment and removal of hazardous materials and waste (see also specific conditions of certification for the technical areas of **Public Health**, **Waste Management**, **Hazardous Materials Management**, and **Worker Safety**).

COM-13: Incident-Reporting Requirements. Within one (1) hour, the project owner shall notify the CPM or Compliance Office Manager, by telephone and e-mail, of any incident at the power plant or appurtenant facilities that results or could result in any of the following:

1. reduction in the facility's ability to respond to dispatch (excluding forced outages caused by protective equipment or other typically encountered shutdown events);
2. health and safety impacts on the surrounding population;
3. property damage off-site;
4. response by off-site emergency response agencies;
5. serious on-site injury;
6. serious environmental damage; or
7. emergency reporting to any federal, state, or local agency.

The notice shall describe the circumstances, status, and expected duration of the incident. If warranted, as soon as it is safe and feasible, the project owner shall implement the safe shutdown of any non-critical equipment and removal of any hazardous materials and waste that pose a threat to public health and safety and to environmental quality (also, see specific conditions of certification for the technical areas of **Hazardous Materials Management** and **Waste Management**).

Within one (1) week of the incident, the project owner shall submit to the CPM a detailed incident report, which includes, as appropriate, the following information:

1. a brief description of the incident, including its date, time, and location;
2. a description of the cause of the incident, or likely causes if it is still under investigation;
3. the location of any off-site impacts;
4. description of any resultant impacts;
5. a description of emergency response actions associated with the incident;
6. identification of responding agencies;
7. identification of emergency notifications made to federal, state, and/or local agencies;
8. identification of any hazardous materials released and an estimate of the quantity released;
9. a description of any injuries, fatalities, or property damage that occurred as a result of the incident;
10. fines or violations assessed or being processed by other agencies;
11. name, phone number, and e-mail address of the appropriate facility contact person having knowledge of the event; and
12. corrective actions to prevent a recurrence of the incident.

The project owner shall maintain all incident report records for the life of the project, including closure. After the submittal of the initial report for any incident, the project owner shall submit to the CPM copies of incident reports within twenty-four (24) hours of a request.

COM-14: Non-Operation. If the facility ceases operation temporarily, either planned or unplanned, for longer than one (1) week (or other CPM-approved date), but less than three (3) months (or other CPM-approved date), the project owner shall notify the CPM, interested agencies, and nearby property owners. Notice of planned non-operation shall be given at least two (2) weeks prior to the scheduled date. Notice of unplanned non-operation shall be provided no later than one (1) week after non-operation begins.

For any non-operation, a Repair/Restoration Plan for conducting the activities necessary to restore the facility to availability and reliable and/or improved performance shall be submitted to the CPM within one (1) week after notice of non-operation is given. If non-operation is due to an unplanned incident, temporary repairs and/or corrective actions may be undertaken before the Repair/Restoration Plan is submitted. The Repair/Restoration Plan shall include:

1. identification of operational and non-operational components of the plant;
2. a detailed description of the repair or restoration activities;
3. a proposed schedule for completing the repair or restoration activities;
4. an assessment of whether or not the proposed activities would require changing, adding, and/or deleting any conditions of certification, and/or would cause noncompliance with any applicable LORS; and
5. planned activities during non-operation, including any measures to ensure continued compliance with all conditions of certification and LORS.

Written updates to the CPM for non-operational periods, until operation resumes, shall include:

1. progress relative to the schedule;
2. developments that delayed or advanced progress or that may delay or advance future progress;
3. any public, agency, or media comments or complaints; and
4. projected date for the resumption of operation.

During non-operation, all applicable conditions of certification and reporting requirements remain in effect. If, after one (1) year from the date of the project owner's last report of productive Repair/Restoration Plan work, the facility does not resume operation or does not provide a plan to resume operation, the Executive Director may assign suspended status to the facility and recommend commencement of permanent closure activities. Within ninety (90) days of the Executive Director's determination, the project owner shall do one of the following:

1. If the facility has a closure plan, the project owner shall update it and submit it for Energy Commission review and approval.
2. If the facility does not have a closure plan, the project owner shall develop one consistent with the requirements in this Compliance Plan and submit it for Energy Commission review and approval.

COM-15: Facility Closure Planning. To ensure that a facility's eventual permanent closure and long-term maintenance do not pose a threat to public health and safety and/or to environmental quality, the project owner shall coordinate with the Energy Commission to plan and prepare for eventual permanent closure.

A. Provisional Closure Plan and Estimate of Permanent Closure Costs
To assure satisfactory long-term site maintenance and adequate closure for "the whole of a project," the project owner shall submit a Provisional Closure Plan and Cost Estimate for CPM review and approval within sixty (60) days after the start of commercial operation. The Provisional Closure Plan and Cost Estimate

shall consider applicable final closure plan requirements, including interim and long-term, post-closure site maintenance costs, and reflect:

1. facility closure costs at a time in the facility's projected life span when the mode and scope of facility operation would make permanent closure the most expensive;
2. the use of an independent third party to carry out the permanent closure; and
3. no use of salvage value to offset closure costs.

The Provisional Closure Plan and Cost Estimate shall provide for a phased closure process and include but not be limited to:

1. comprehensive scope of work and itemized budget;
2. closure plan development costs;
3. dismantling and demolition;
4. recycling and site clean-up;
5. mitigation and monitoring direct, indirect, and cumulative impacts;
6. site remediation and/or restoration;
7. interim operation and post-closure monitoring and maintenance, including long-term equipment replacement costs; and
8. contingencies.

The project owner shall include an updated Provisional Closure Plan and Cost Estimate in every fifth-year ACR for CPM review and approval. Each updated Provisional Closure Plan and Cost Estimate shall reflect the most current regulatory standards, best management practices, and applicable LORS.

B. Final Closure Plan and Cost Estimate

At least three (3) years prior to initiating a permanent facility closure, the project owner shall submit for Energy Commission review and approval, a Final Closure Plan and Cost Estimate, which includes any long-term, post-closure site maintenance and monitoring. Final Closure Plan and Cost Estimate contents include, but are not limited to:

1. a statement of specific Final Closure Plan objectives;
2. a statement of qualifications and resumes of the technical experts proposed to conduct the closure activities, with detailed descriptions of previous power plant closure experience;
3. identification of any facility-related installations not part of the Energy Commission certification, designation of who is responsible for these, and an explanation of what will be done with them after closure;
4. a comprehensive scope of work and itemized budget for permanent plant closure and long-term site maintenance activities, with a description and

explanation of methods to be used, broken down by phases, including, but not limited to:

   a. dismantling and demolition;
   b. recycling and site clean-up;
   c. impact mitigation and monitoring;
   d. site remediation and/or restoration;
   e. post-closure maintenance; and
   f. contingencies.

5. a revised/updated Final Cost Estimate for all closure activities, by phases, including long-term, post-closure site monitoring and maintenance costs, and replacement of long-term post-closure equipment;
6. a schedule projecting all phases of closure activities for the power plant site and all appurtenances constructed as part of the Energy Commission-certified project;
7. an electronic submittal package of all relevant plans, drawings, risk assessments, and maintenance schedules and/or reports, including an above- and below-ground infrastructure inventory map and registered engineer's or delegate CBO's assessment of demolishing the facility; additionally, for any facility that permanently ceased operation prior to submitting a Final Closure Plan and Cost Estimate and for which only minimal or no maintenance has been done since, a comprehensive condition report focused on identifying potential hazards;
8. all information additionally required by the facility's conditions of certification applicable to plant closure;
9. an equipment disposition plan, including:
   a. recycling and disposal methods for equipment and materials; and
   b. identification and justification for any equipment and materials that will remain on-site after closure;
10. a site disposition plan, including but not limited to:
   a. proposed rehabilitation, restoration, and/or remediation procedures, as required by the conditions of certification and applicable LORS,
   b. long-term site maintenance activities, and
   c. anticipated future land-use options after closure;
11. identification and assessment of all potential direct, indirect, and cumulative impacts and proposal of mitigation measures to reduce significant adverse impacts to a less-than-significant level; potential impacts to be considered shall include, but not be limited to:
   a. traffic
   b. noise and vibration

c. soil erosion

d. air quality degradation

e. solid waste

f. hazardous materials

g. waste water discharges

h. contaminated soil

12. identification of all current conditions of certification, LORS, federal, state, regional, and local planning efforts applicable to the facility, and proposed strategies for achieving and maintaining compliance during closure;
13. updated mailing list or listserv of all responsible agencies, potentially interested parties, and property owners within one (1) mile of the facility;
14. identification of alternatives to plant closure and assessment of the feasibility and environmental impacts of these; and
15. description of and schedule for security measures and safe shutdown of all non-critical equipment and removal of hazardous materials and waste (see conditions of certification for **Public Health**, **Waste Management**, **Hazardous Materials Management**, and **Worker Safety**).

If an Energy Commission-approved Final Closure Plan and Cost Estimate is not implemented within one (1) year of its approval date, it shall be updated and re-submitted to the Commission for supplementary review and approval. If a project owner initiates but then suspends closure activities, and the suspension continues for longer than one (1) year, or subsequently abandons the facility, the Energy Commission may access the required financial assurance funds to complete the closure. The project owner remains liable for all costs of contingency planning and closure.

COM-16: Financial Assurance for Closure and Post-Closure Care. The project owner shall provide financial assurances to the Energy Commission, guaranteeing adequate and readily available funds to finance interim operation, facility closure, and post-closure site care, as needed.

Within thirty (30) days following CPM approval of the project owner's first Provisional Closure Plan and Cost Estimate, pursuant to **COM-15**, the project owner shall establish an irrevocable closure surety bond and standby trust fund. The surety bond shall guarantee the project owner's performance of closure, as specified in the Provisional Closure Plan, and shall be in the amount of the CPM-approved Provisional Closure Cost Estimate. The standby trust fund shall have as its Beneficiary the California State Energy Resources Conservation and Development Commission.

Within sixty (60) days of CPM approval of each sequential Provisional Cost Estimate prepared pursuant to **COM-15**, the amount of the surety bond shall be adjusted to reflect any change in the estimate. Within thirty (30) days of making the adjustment, the project owner shall submit for CPM review and approval documentation of the adjustment. Each year, on the anniversary of the establishment of the surety bond and standby trust fund, the project owner shall provide to the CPM documentation from the sureties of the bond’s current value.

Using surety bond funds to implement closure may not fully satisfy the project owner’s obligations under these conditions.

Provisions from California Bond and Undertaking Law, as well as other statutory and case law, may be applicable.

KEY EVENTS LIST

PROJECT: ____________________

DOCKET #: ____________________

COMPLIANCE PROJECT MANAGER: ____________________

EVENT DESCRIPTION	DATE
Certification Date	
Obtain Site Control	
On-line Date	
POWER PLANT SITE ACTIVITIES	
Start Site Assessment/Pre-construction	
Start Site Mobilization/Construction	
Begin Pouring Major Foundation Concrete	
Begin Installation of Major Equipment	
Completion of Installation of Major Equipment	
First Combustion of Gas Turbine	
Obtain Building Occupation Permit	
Start Commercial Operation	
Complete All Construction	
TRANSMISSION LINE ACTIVITIES	
Start T/L Construction	
Synchronization with Grid and Interconnection	
Complete T/L Construction	
FUEL SUPPLY LINE ACTIVITIES	
Start Gas Pipeline Construction and Interconnection	
Complete Gas Pipeline Construction	
WATER SUPPLY LINE ACTIVITIES	
Start Water Supply Line Construction	
Complete Water Supply Line Construction	

Compliance Table 1:
Summary of Compliance Conditions of Certification

CONDITION NUMBER	SUBJECT	DESCRIPTION
COM-1	Unrestricted Access	The project owner shall grant Energy Commission staff and delegate agencies or consultants unrestricted access to the power plant site.
COM-2	Compliance Record	The project owner shall maintain project files on-site. Energy Commission staff and delegate agencies shall be given unrestricted access to the files.
COM-3	Compliance Verification Submittals	The project owner is responsible for the delivery and content of all verification submittals to the CPM, whether such condition was satisfied by work performed or the project owner or his agent.
COM-4	Pre-construction Matrix and Tasks Prior to Start of Construction	Construction shall not commence until all of the following activities/submittals have been completed: • Project owner has submitted a pre-construction matrix identifying conditions to be fulfilled before the start of construction; • Project owner has completed all pre-construction conditions to the CPM's satisfaction; and • CPM has issued a letter to the project owner authorizing construction.
COM-5	Compliance Matrix	The project owner shall submit a compliance matrix (in a spreadsheet format) with each Monthly and Annual Compliance Report, which includes the current status of all **Compliance** Conditions of Certification.
COM-6	Monthly Compliance Reports and Key Events List	During construction, the project owner shall submit Monthly Compliance Reports (MCRs) which include specific information. The first MCR is due 1 month following the docketing of the Energy Commission's Decision and shall include an initial list of dates for each of the events identified on the Key Events List.
COM-7	Annual Compliance Reports	After construction ends and throughout the life of the project, the project owner shall submit Annual Compliance Reports (ACRs) instead of Monthly Compliance Reports.
COM-8	Confidential Information	Any information the project owner designates as confidential shall be submitted to the Energy Commission's Executive Director with a request for confidentiality.
COM-9	Annual Fees	Required payment of the Annual Energy Facility Compliance Fee.
COM-10	Amendments, Staff-Approved Project Modifications, Ownership Changes, and Verification Changes	The project owner shall petition the Energy Commission to delete or change a condition of certification, modify the project design or operational requirements, and/or transfer ownership or operational control of the facility.

Compliance ConditionsTable 1:
Summary of Compliance Conditions of Certification

CONDITION NUMBER	SUBJECT	DESCRIPTION
COM-11	Reporting of Complaints, Notices, and Citations	Prior to the start of construction, the project owner shall provide all property owners within a 1-mile radius a telephone number to contact project representatives with questions, complaints or concerns. The project owner shall respond to all recorded complaints within 24 hours. Within 10 days of receipt, the project owner shall report to the CPM all notices, complaints, violations, and citations.
COM-12	Site Contingency Plan	No less than 60 days prior to the start of commercial operation the project owner shall submit an on-site Contingency Plan to ensure protection of public health and safety and environmental quality during a response to an unanticipated event or emergency.
COM-13	Incident-Reporting Requirements	The project owner shall notify the CPM within 1 hour of an incident and submit a detailed incident report within 30 days, maintain records of incident report, and submit public health and safety documents with employee training provisions.
COM-14	Non-Operation	No later than 2 weeks prior to a facility's planned non-operation, or no later than 2 weeks after the start of unplanned non-operation, the project owner shall notify the CPM, interested agencies and nearby property owners of this status. During non-operation, the project owner shall provide written updates to the CPM.
COM-15	Facility Closure Planning	Within 60 days after initiating commercial operation, the project owner shall submit a Provisional Closure Plan and Cost Estimate for permanent closure. At least 3 years prior to closing, the project owner shall submit a Final Closure Plan and Cost Estimate.
COM-16	Financial Assurance for Closure and Post-Closure Care	Within 30 days following approval of the Provisional Closure Plan and Cost Estimate or the Final Closure Plan and Cost Estimate (whichever is most recent), the project owner shall establish a CPM-approved closure financial assurance mechanism to ensure the availability of funds needed to adequately perform facility closure and post-closure care.

ATTACHMENT A
COMPLAINT REPORT/RESOLUTION FORM

COMPLAINT LOG NUMBER:________________________ DOCKET NUMBER:__________________________

PROJECT NAME:____

COMPLAINANT INFORMATION

NAME:____ PHONE NUMBER:_____________________________

ADDRESS:____

COMPLAINT

DATE COMPLAINT RECEIVED:________________________ TIME COMPLAINT RECEIVED:___________________

COMPLAINT RECEIVED BY: __________________________ ☐ TELEPHONE ☐ IN WRITING (COPY ATTACHED)

DATE OF FIRST OCCURRENCE:______________________

DESCRIPTION OF COMPLAINT (INCLUDING DATES, FREQUENCY, AND DURATION):_______________________

____

____

FINDINGS OF INVESTIGATION BY PLANT PERSONNEL:____

____

____

DOES COMPLAINT RELATE TO VIOLATION OF A CEC REQUIREMENT? ☐ YES ☐ NO

DATE COMPLAINANT CONTACTED TO DISCUSS FINDINGS:____

DESCRIPTION OF CORRECTIVE MEASURES TAKEN OR OTHER COMPLAINT RESOLUTION:___________________

____

____

DOES COMPLAINANT AGREE WITH PROPOSED RESOLUTION? ☐ YES ☐ NO

IF NOT, EXPLAIN:____

____

CORRECTIVE ACTION

IF CORRECTIVE ACTION NECESSARY, DATE COMPLETED:____

DATE FIRST LETTER SENT TO COMPLAINANT (COPY ATTACHED):_____________________________________

DATE FINAL LETTER SENT TO COMPLAINANT (COPY ATTACHED):_____________________________________

OTHER RELEVANT INFORMATION:____

____

____

"This information is certified to be correct."

PLANT MANAGER SIGNATURE:_________________________________ DATE:________________________

(ATTACH ADDITIONAL PAGES AND ALL SUPPORTING DOCUMENTATION, AS REQUIRED)

HUNTINGTON BEACH ENERGY PROJECT (12-AFC-02)
PRELIMINARY STAFF ASSESSMENT – Part A

PREPARATION TEAM

Executive Summary .... Felicia Miller

Introduction .... Felicia Miller

Project Description .... Felicia Miller

Environmental Assessment

~~Air Quality ....~~

Biological Resources .... Anwar Ali / Heather Blair / Jennifer Lancaster

Cultural Resources .... Gabriel Roark / Thomas Gates / Amber Grady

Hazardous Materials Management .... Geoff Lesh, PE, CSP, CFPS

Land Use .... Steven Kerr

Noise and Vibration .... Edward Brady / / Shahab Khoshmashrab

~~Public Health ....~~

Socioeconomics .... Lisa Worrall

Soil and Water Resources .... Mike Conway, P.G.

Traffic and Transportation .... Jonathan Fong
Visual Plume Modeling .... Tao Jiang, Ph.D., P.E. / Joseph Hughes

Transmission Line Safety and Nuisance .... Obed Odoemelam, Ph.D

Visual Resources .... Jeanine Hinde

Waste Management .... Ellie Townsend-Hough

Worker Safety and Fire Protection .... Geoff Lesh, PE, CSP, CFPS

Engineering Assessment

Facility Design .... Shahab Khoshmashrab

Geology and Paleontology .... Casey Weaver, CEG

Power Plant Efficiency .... Edward Brady / Shahab Khoshmashrab

Power Plant Reliability .... Shahab Khoshmashrab

Transmission System Engineering .... Laiping Ng / Mark Hesters

~~Alternatives ....~~

Compliance Conditions .... Eric Veerkamp

Project Assistant .... Diane L. Scott