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PUENTE POWER PLANT

Preliminary Staff Assessment



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PUENTE POWER PLANT PROJECT AMENDMENT (15-AFC-01)
PRELIMINARY STAFF ASSESSMENT

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EXECUTIVE SUMMARY

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INTRODUCTION

This Preliminary Staff Assessment (PSA) is a publication by California Energy Commission (Energy Commission) staff for the Puente Power Project (P3). NRG Oxnard Energy Center (applicant/project owner), an indirect, wholly owned subsidiary of NRG, Inc., has submitted an Application for Certification to develop and operate a 262-megawatt (MW) electric power project on a 3-acre portion of the 36-acre Mandalay Generating Station (MGS) at 393 North Harbor Boulevard, Oxnard, Ventura County. The project comprises one gas-fired combustion turbine generator (CTG), a 188-foot tall exhaust stack, and miscellaneous improvements necessary to either extend or reuse existing site structures and utilities. The existing MGS Units 1 and 2 would be decommissioned, and the power blocks and exhaust structure would be demolished and removed, once P3 is built and operational (assuming it is approved by the Energy Commission). The existing MGS Unit 3 will continue to operate.

Approval (certification of a license) for a thermal power plant with a generating capacity of 50 MW or greater falls under the regulatory oversight of the Energy Commission (Pub. Resources Code § 25500, et seq.). As such, the Energy Commission is the lead agency under the California Environmental Quality Act (CEQA). The Energy Commission's certified regulatory program provides the environmental analysis that satisfies CEQA requirements. In fulfilling this responsibility, Energy Commission staff provides an independent assessment of the project's engineering design, evaluates its potential effects on the environment and on public health and safety, and considers environmental justice populations, and determines whether the project is in conformance with all applicable local, state, and federal laws, ordinances, regulations and standards (LORS). LORS compliance and determinations of key federal Clean Air Act and Clean Water Act requirements are made by staff's active coordination with, and incorporation of, other regulatory agencies and their findings (such as the Ventura County Air Pollution Control District and its Preliminary Determination of Compliance [PDOC]). The result of staff's research, collaboration and comprehensive process of discovery and analysis are recommendations for mitigation requirements to mitigate any significant adverse environmental effects resulting from the proposed P3 project and the demolition of the MGS.

Following publication of this PSA, there will be a 45-day comment period. Agencies, intervenors, and the public are invited to submit comments on staff's analyses of project impacts and the proposed conditions of certification designed to mitigate those significant impacts on the environment, public health, and the transmission system from the proposed construction and operation of the project and the demolition of the MGS.

For the ease of the reader, this PSA provides a description of the environmental setting of the entire project. Specific details of the project are explained in the **Project Description** and other technical sections of this PSA. A summary of the P3 components is provided below:

- A single General Electric (GE) Model 7HA.01 CTG, with a maximum 271 net MW capability, with a 262 net MW generating capacity, that would entail simple-cycle, fast-start peaking generation capability;
- A 188-foot-tall exhaust stack, oriented in location towards the westerly (beach) side of the site;
- Four 100-foot-tall poles carrying transmission line connections from the new powerblock to an existing 230 kilovolt (kV) switchyard immediately to the east of P3 owned and operated by Southern California Edison (SCE); and
- Extensions of existing water, storm drain, fire water loop, septic and gas lines to service the CTG and support buildings.

This PSA is not the decision document for these proceedings, nor does it contain findings of the Energy Commission related to environmental impacts or the project's compliance with local, state, and federal LORS. Rather, the PSA is a precursor to the Final Staff Assessment (FSA) which will serve as staff's testimony during evidentiary hearings to be held by an assigned Committee of two Energy Commissioners (Commissioner Janea Scott the Presiding Member, and Commissioner Karen Douglas the Associate Member . During evidentiary hearings, the Committee will consider testimony, comment, and input provided and presented by staff, the applicant, intervenors, governmental agencies, and the public. The Committee will then engage in deliberation and review of the record before writing and submitting the Presiding Member's Proposed Decision (PMPD) for a 30-day public comment period and then to the full Energy Commission for consideration and action. Following a public hearing, most likely during a monthly Business Meeting, the full Commission will make a final decision on the 33P3 proposal, expected in February of 201720172017.

PROJECT BACKGROUND

The P3 is proposed as a replacement project for the majority of power currently generated by the existing MGS, which serves the Moorpark subarea of the Big Creek/ Ventura local reliability area in the Greater Los Angeles basin. P3 would replace the 430 MW generating capacity of MGS Units 1 and 2 with a new, single 262 MW CTG. MGS Units 1 and 2 are subject to the California State Water Resources Control Board's Statewide Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling, also referred to as the Once-Through Cooling (OTC) Policy. Irrespective of the proposed development of P3, pumping of ocean water for cooling MGS Units 1 and 2 must be reduced or eliminated as of the OTC Policy compliance date of December 31, 2020. If P3 is approved and developed, MGS Units 1 and 2 would be retired by the completion of commissioning of P3. The decommissioned facilities and structures would be demolished to existing grade, and the existing 200-foot tall exhaust stack, and Units 1 and 2 boilers, turbines and other power block structures would be removed.

PROPOSED PROJECT LOCATION AND DESCRIPTION

The P3 would be located on a 3-acre portion of the 36-acre MGS property, at the northwest corner which borders the McGrath Lake State Park and Beach. The MGS property is accessed from South Harbor Boulevard via a driveway located north of the Edison Canal. Lands around the project site support some existing energy generation and petroleum transport and storage structures, although lands immediately to the north and west are protected open space (state park, beach and a habitat mitigation area). The project site has previously been graded and compacted, and in the past was used to store fills dredged on a periodic basis from the Edison Canal. The remainder of the MGS property is fully developed with paving, structures and landscaping.

PROJECT OBJECTIVES

The AFC describes the applicant's objectives for the P3 proposal, which are summarized as follows:

- Fulfill NRG's obligations under its 20-year Resource Adequacy Purchase Agreement (RAPA) with SCE requiring development of a 262-MW nominal net output of newer, more flexible and efficient natural-gas generation[1];
- Provide an efficient, reliable, and predictable power supply by using a simple-cycle, naturalgas–fired combustion turbine to replace the existing once-through cooling (OTC) generation;
- Support the local capacity requirements of the California Independent System Operator (CAISO) Big Creek/Ventura local capacity reliability (LCR) area;
- Develop a 262-MW nominal net power-generating plant that provides operational flexibility with rapid-start and fast-ramping capability;
- Be designed, permitted, built, and commissioned by June 1, 2020;
- Minimize environmental impacts and development costs by developing on an existing brownfield site and reusing existing infrastructure;
- Site the project on property that has an industrial land use designation with consistent zoning[2]; and
- Safely produce electricity without creating significant environmental impacts.

[1] On May 26, 2016 the California Public Utilities Commission approved a 20 year contract between SCE and NRG to provide electrical generating power from the P3.

[2] On June 7, 2016 the Oxnard City Council voted 5-0 to approve an amendment to the city's Oxnard General Plan to prohibit power generation facilities greater than 50 MW in areas subject to coastal hazards (which includes the MGS and P3 sites). Unless rescinded or otherwise reconsidered, the general plan amendment will become effective July 7, 2016. Staff will address any inconsistencies between the P3 and local land use plans arising from approval of the general plan amendment in the Final Staff Assessment.

PROJECT ALTERNATIVES

Project alternatives developed for the P3 are fully discussed in the **Alternatives** section of this PSA, and include an evaluation of the following:

1. No Project Alternative: MGS Units 1 and 2 remain nonoperational for an undetermined time;

2. Conceptual Site Reconfiguration Alternatives: Two alternative arrangements of new site features and buildings; and

3. Off-Site Alternatives: Analysis of two alternative sites for location of a project similar to the P3 – one at East 5th Street approximately 7.2 miles east of MGS, and one near Ormond Beach at East McWane Avenue approximately 6.5 mile southeast of MGS.

Staff has concluded that the No Project Alternative could cause significant and unavoidable impacts to biological and visual resources and would not meet any of the project's basic objectives. The two Site Reconfiguration Alternatives would avoid filling 2.03 acres of Coastal Commission jurisdictional wetlands; no other environmental impacts would be reduced or avoided by reconfiguring the power plant facilities on the P3 site. Reconfiguring the site would not create any new environmental impacts compared to the proposed P3. Either site reconfiguration would likely attain the basic project objectives. The two off-site Alternatives would meet at least half of the project's basic objectives, but their feasibility is uncertain given that neither site is under control of the applicant. Under the East 5th Street Off-site Alternative, no impact would occur from the risk of inundation by tsunami, but use of this site would result in significant and unavoidable impacts related to aircraft and pilot safety. The Ormond Beach area – East McWane Avenue off-site Alternative would avoid three potentially significant effects of the proposed P3 without causing other significant effects. Impacts that would be avoided include filling of jurisdictional wetlands, risk of inundation by tsunami, and temporary water quality impacts during demolition. However, the Ormond Beach area-East McWane Avenue off-site alternative would not include the beneficial visual improvements that result from removal of MGS Units 1 and 2 as part of the project.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES AND MITIGATION

Below is a summary of environmental consequences and mitigation proposed in this PSA. This section also provides a summary of outstanding information that will be analyzed in the FSA.

Executive Summary Table 1-2
Environmental and Engineering Assessment

Technical Area	Complies with LORS	Impacts Mitigated	Additional Information Required
Air Quality/Greenhouse gases	Yes	No	Yes
Biological Resources	Yes	Yes	No
Cultural Resources	Yes	Yes	No
Hazardous Materials	Yes	Yes	No
Land Use	Yes[3]	Yes	No
Noise and Vibration	Yes	Yes	No
Public Health	Yes	Yes	No
Socioeconomics	Yes	Yes	No
Soil and Water Resources	Yes	Yes	No
Traffic & Transportation	Yes	Yes	No
Transmission Line Safety/Nuisance	Yes	Yes	No
Visual Resources	Yes	Yes	No
Waste Management	Yes	Yes	No
Worker Safety and Fire Protection	Yes	Yes	No
Facility Design	Yes	Yes	No
Geology & Paleontology	Yes	Yes	No
Power Plant Efficiency	Yes	Yes	No
Power Plant Reliability	Yes	Yes	No
Transmission System Engineering	Yes	Yes	No

AIR QUALITY/GREENHOUSE GASES

At the time of publication, the proposed P3 project has not been fully mitigated. Staff has identified the need for additional mitigation for particulate matter less than 10 microns (PM10) and sulfur dioxide (a precursor to PM10) emissions impacts under the California Environmental Quality Act (CEQA). Staff is continuing the development of mitigation measures to ensure the proposed Air Quality conditions of certification would include suitable mitigation to reduce the P3's direct and cumulative Air Quality impacts to a less than significant level. These conditions would reduce air quality impacts to less than significant for any population in the project's six-mile radius, including the Environmental Justice (EJ) population.

[3] The proposed project is consistent with the current development patterns for the area established by the city of Oxnard General Plan Land Use Element, Local Coastal Plan (LCP) and Coastal Zoning Ordinance. In addition, the project is consistent with development standards of the Coastal Energy Facilities (EC) sub-zone. However, it must be noted that on June 7, 2016 the city council of Oxnard voted 5-0 to approve an amendment to the city's General Plan to prohibit power generation facilities greater than 50 MW in areas subject to coastal hazards (which includes the MGS and P3 sites). Unless rescinded or otherwise reconsidered, the general plan amendment will become effective July 7, 2016. Staff will address any inconsistencies between the P3 and local land use plans arising from approval of the general plan amendment in the Final Staff Assessment.

BIOLOGICAL RESOURCES

The P3 is an industrial brownfield site with an operating power plant. Although the majority of habitat on-site is disturbed with nonnative iceplant mats, one special-status species, woolly seablite, occurs on the project site. The rest of the site is developed, paved, or covered with ruderal (weedy) species, and ornamental landscaping. Special-status wildlife are not expected to occur on the site; however, dunes to the west of the site support nesting western snowy plover (a federally-listed threatened species) and critical habitat for western snowy plover, as well as nesting habitat for the California least tern (a federally and state-listed endangered species). Salt marsh habitat north of McGrath Lake and wetlands immediately north of the project may support special-status birds including the Belding's savannah sparrow (a state-listed endangered species), and California black rail (a state-listed threatened species). 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 8**. With implementation of proposed conditions of certification, compliance with LORS would be achieved and direct, indirect, and cumulative impacts would be avoided, minimized, or mitigated to less-than-significant levels. These conditions would reduce biological resources impacts to less than significant for any population in the project's six-mile radius, including the EJ population.

CULTURAL RESOURCES

The proposed P3 could result in significant, direct impacts to buried archaeological resources, which may qualify as historical or unique archaeological resources under the California Environmental Quality Act. 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 the event archaeological resources are found buried beneath the project site during construction-related ground disturbance.

Staff's analysis of the proposed Puente Power Project with regard to ethnographic and historical built environment resources concludes that no ethnographic or historical built environment resources are present in the project areas of analysis and therefore no such resources would be impacted by the construction or operation of the project.

The PSA considers environmental justice populations in the project analysis, and staff has not identified any Native American environmental justice populations that either reside within 6 miles of the project or that rely on any subsistence resources that could be impacted by P3.

EFFICIENCY

While the project would consume substantial amounts of energy, it would do so in a sufficiently efficient manner to satisfy the project's objectives of producing peak load electricity and ancillary load-following services. 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 conditions of certification apply to Power Plant Efficiency.

FACILITY DESIGN

Staff has evaluated the proposed engineering LORS, design criteria, and design methods for the project, and concludes that the project will comply with applicable engineering LORS. The Facility Design conditions of certification will ensure that the P3 is completed in accordance with these LORS.

GEOLOGY & PALEONTOLOGY

Because of its geologic setting, the P3 site could be subject to very strong levels of earthquake-related ground shaking. The significant effects of strong ground shaking on the P3 structures must be mitigated through structural designs required by the most recent edition of the California Building Code (CBC). The CBC 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 in accordance with proposed Conditions of Certification **GEO-1** and proposed Facility Design Conditions of Certification **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.

HAZARDOUS MATERIALS

Staff's evaluation of the proposed project (with proposed mitigation measures) indicates that hazardous material use would pose no significant impact to the public. Staff's analysis also shows that there would be no significant cumulative impact. With adoption of the proposed conditions of certification, the proposed project would comply with all applicable LORS. In response to California Health and Safety Code, section 25531 et seq., the applicant would 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 City of Oxnard Fire Department and by Energy Commission staff. In addition, staff's proposed Condition of Certification **HAZ-2** requires 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. These conditions would reduce potential hazardous materials impacts to less than significant for any population in the project's six-mile radius, including the EJ population.

LAND USE

With staff's proposed condition of certification, the proposed Puente Power Project (P3) would comply with applicable laws, ordinances, regulations, and standards (LORS) related to land use. The P3 would be required to provide an area for public access and use to satisfy the Warren-Alquist Act. Staff will work with the city of Oxnard, the applicant, and other agencies and individuals to designate a site and use that will satisfy this requirement. Staff will finalize Condition of Certification **LAND-1** in the Final Staff Assessment (FSA) to ensure that the P3 provides a public use area. No significant land

use impacts have been identified for any population in the project's six-mile radius, including the area's EJ population.

The proposed project is consistent with the current development patterns for the area established by the city of Oxnard General Plan Land Use Element, Local Coastal Plan (LCP) and Coastal Zoning Ordinance. In addition, the project is consistent with development standards of the Coastal Energy Facilities (EC) sub-zone. However, it must be noted that on June 7, 2016 the city council of Oxnard voted 5-0 to approve an amendment to the city's General Plan to prohibit power generation facilities greater than 50 MW in areas subject to coastal hazards (which includes the MGS and P3 sites). Unless rescinded or otherwise reconsidered, the general plan amendment will become effective July 7, 2016. Staff will address any inconsistencies between the P3 and local land use plans arising from approval of the general plan amendment in the Final Staff Assessment.

NOISE AND VIBRATION

Staff concludes that if the P3 is built and operated in conformance with the proposed **Noise and Vibration** conditions of certification, it would comply with all applicable noise and vibration laws, ordinances, regulations, and standards (LORS) and would produce no significant direct or cumulative adverse noise impacts on people within the project area, including the environmental justice population. Staff would work under the authority of the Energy Commission's Compliance Project Manager (CPM) to monitor and review the reporting of project performance during construction, demolition, and the full term of operation, including facility closure.

PUBLIC HEALTH

Staff has analyzed the potential public health risks associated with construction and operation of the P3 using a highly conservative methodology that accounts for impacts on the most sensitive individuals in any given population. Staff concludes that, with full mitigation, there would be no significant health impacts from the project's toxic air contaminant emissions on residents and workers in the area, including the EJ population within a 6 mile radius of the P3.

Staff concludes that construction and operation of the Puente Power Project (P3) would not cause significant adverse direct, indirect, or cumulative socioeconomic impacts on the project area's housing, law enforcement services, or parks. Staff also concludes 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 Condition of Certification **SOCIO-1** would ensure project compliance with applicable laws, ordinances, regulations, and standards (LORS).

RELIABILITY

Staff concludes that P3 would be built to operate in a manner consistent with industry norms for reliable operation and would be able to achieve the equivalent availability factor of between 94 and 98 percent predicted in the AFC. (The equivalent availability factor of a power plant is the percentage of time it is available to generate power,

accounting for both planned and unplanned outages.) No conditions of certification are proposed for power plant reliability.

SOCIOECONOMICS

Staff concludes that construction and operation of the P3 would not cause significant adverse direct, indirect, or cumulative socioeconomic impacts on the project area's housing, law enforcement services, or parks. Staff also concludes 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 Condition of Certification **SOCIO-1** would ensure project compliance with applicable LORS.

Staff concludes the socioeconomics impacts from the proposed P3 are less than significant. Therefore, the socioeconomic impacts are less than significant for any population within the six-mile radius of the P3, including the EJ population

SOIL AND WATER RESOURCES

The proposed P3 could potentially impact soil and water resources. Staff compared the project to the existing baseline conditions and evaluated the potential for P3 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 LORS and state policies. Staff also discusses the present and future flood risks in terms of the severity of consequences from flood hazards. Using significance criteria based on the CEQA Guidelines, staff concludes that the project would not result in significant adverse impacts that cannot be avoided or mitigated, including any population in the project's six-mile radius, which includes the EJ population.

Staff also concludes that P3 would not result in the indirect impact of inducing population growth in the vicinity, and P3's incremental effects on regional water supply or the quality of surface water and groundwater would not be cumulatively considerable.

TRAFFIC & TRANSPORTATION

As proposed, the construction and operation of P3 could result in significant impacts to the nearby traffic and transportation system. Staff has determined that with implementation of staff's proposed conditions of certification, impacts from P3 to the surrounding traffic and transportation system would be less than significant, including impacts to any population in the project's six-mile radius, which includes the EJ population. Condition of Certification **TRANS-2** would require implementation of a Traffic Control Plan (TCP) that would reduce the potential for accidents caused by construction traffic exiting the project site to travel northbound on Harbor Boulevard. Conditions of Certification **TRANS-6** and **TRANS-7** would mitigate potentially significant impacts to aviation from the thermal plumes that P3 would generate from the combustion turbine generator (CTG) stack. Condition of Certification **TRANS-6** would require obstruction marking and lighting of the CTG stack to alert pilots of the location of the plumes at night. Condition of Certification **TRANS-7** would require the project owner to work with the Federal Aviation Administration (FAA) and the Oxnard Airport Manager

to notify all pilots using the Oxnard Airport and airspace above the P3 site of potential thermal plume hazards.

TRANSMISSION LINE SAFETY/NUISANCE

The project proposes constructing one new single-circuit, 220-kilovolt (kV) transmission line to connect the proposed P3 to Southern California Edison's (SCE's) switchyard adjacent to the existing MGS site. The proposed lines would lie entirely within the boundaries of the P3 and MGS sites, and no offsite lines would be necessary. The proposed 220-kV line would be designed, constructed, operated, routed, and maintained according to SCE's guidelines for line safety and field management, which in turn conform to applicable LORS. MGS Units 1 and 2 would cease operations once P3 construction is complete; MGS Unit 3 would remain on-line. Since this is an existing power plant site and the connecting transmission line 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, including to any population in the project's six-mile radius, which includes the EJ population.

TRANSMISSION SYSTEM ENGINEERING

The proposed P3 transmission related system equipment, including the step-up transformer, the 230-kV overhead transmission line, and the termination, are acceptable and would comply with all applicable laws, ordinances, regulations, and standards (LORS). Interconnection of the P3 would not trigger any downstream transmission system upgrades beyond the point of interconnection with the adjacent substation. Because downstream upgrades are not necessary, additional environmental review under CEQA, covering downstream impacts, is not necessary.

VISUAL RESOURCES

The proposed project would not have a substantial adverse effect on a scenic vista, nor substantially damage a scenic resource. P3 would be in conformance with applicable laws, ordinances, regulations, and standards (LORS) pertaining to visual resources, with the effective implementation of the applicant's proposed mitigation measures and staff's proposed conditions of certification. The impacts on the general population would be less than significant, including the population within a six-mile radius, which includes the EJ population

WASTE MANAGEMENT

The MGS and P3 site is a highly disturbed brownfield site that requires remediation. The owner, NRG, or previous owner Southern California Edison (SCE), would ensure that impacted or contaminated areas on the P3 site are remediated where necessary. The applicant would also implement a Soil Management Plan to provide guidance for proper identification, handling, disposal and containment of contaminated soil during demolition, construction and ground-disturbing activities. The P3's proposed waste management methods and mitigation measures, along with the proposed conditions of certification and demolition waste recycling and diversion requirements, would ensure

that wastes generated by the proposed project would not result in a significant impact to local waste management and disposal facilities.

WORKER SAFETY AND FIRE PROTECTION

Staff concludes that if the applicant for the proposed P3 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 fulfills the requirements of Condition of Certification **WORKER SAFETY-3** through **-7**, the project would incorporate sufficient measures to ensure adequate levels of industrial safety and comply with applicable LORS. The project would result in less than significant impacts on the general population, and the population in the project's six-mile radius, which includes the EJ population. Staff also concludes that the operation of the power plant would not present a significant impact on the City of Oxnard Fire Department.

CUMULATIVE IMPACTS

Preparation of a cumulative impact analysis is required under CEQA. In the CEQA Guidelines, “a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts” (Cal. Code Regs., tit. 14, § 15130(a)(1)). Cumulative impacts must be addressed if the incremental effect of a project, combined with the effects of other projects is “cumulatively considerable” (Cal. Code Regs., tit. 14, § 15130(a)(2)). Such incremental effects are to be “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, § 15164(b)(1)). Together, these projects comprise the cumulative scenario which forms the basis of the cumulative impact analysis.

CEQA also states that both the severity of impacts and the likelihood of their occurrence are to be reflected in the discussion, “but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion of cumulative impacts shall be guided by standards of practicality and reasonableness, and shall focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact” (Cal. Code Regs., tit. 14, § 15130(b)).

DEFINITION OF THE CUMULATIVE PROJECT SCENARIO

Cumulative impacts analysis is intended to identify past, present, and probable future projects that are closely related either in time or location to the project being considered, and consider how they have harmed or may harm the environment. Most of the projects on the Master Cumulative Project List below are required to undergo their own independent environmental reviews under CEQA. Staff developed the list by contacting planning staff with the city of Oxnard, and conducting a review of project information from other agencies, including the cities of Ventura and Port Hueneme, the California Department of Transportation, and the CEQANet database to develop a list of past, present, and reasonably foreseeable projects.

Under CEQA, there are two acceptable and commonly used methodologies for establishing the cumulative impact setting or scenario: the “list approach” and the “projections approach.” The first approach would use a “list of past, present, and probable future projects producing related or cumulative impacts.” (Cal. Code Regs., tit. 14, § 15130(b)(1)(A)). The second approach is to use a “summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact.” (Cal. Code Regs., tit. 14, § 15130(b)(1)(B)). This PSA uses the “list approach” for purposes of state law to provide a tangible understanding and context for analyzing the potential cumulative effects of the proposed project. All projects used in the cumulative impacts analyses for this PSA are listed in the cumulative projects table (**Executive Summary Table 1**), and locations are shown on **Executive Summary Figure 1**.

APPROACH TO CUMULATIVE IMPACT ANALYSIS

This PSA evaluates cumulative impacts within the analysis of each resource area, following three steps:

- Define the geographic scope of cumulative impact analysis for each discipline, based on the potential area within which impacts of the P3 could combine with those of other projects.
- Evaluate the effects of the P3 in combination with past and present (existing) projects within the area of geographic effect defined for each discipline.
- Evaluate the effects of the P3 with foreseeable future projects that occur within the area of geographic effect defined for each discipline.

Executive Summary Table 1
P3 – Master Cumulative Project List

Label ID #	*Project Title*	*Description*	*Location*	*Distance to Project (Miles)*	*Status*
1	Beach walk on the Mandalay Coast (formerly North Shore Subdivision)	183 single-family homes, 109 detached condos, and on-site amenities.	NE corner of W Fifth St and Harbor Blvd, Oxnard	0.83	Plan Check, Dirt, gravel and rock movement. Submitted plans for off-site improvements for Harbor Boulevard - widening, etc. No active permits pulled for houses yet
2	Oxnard Shores Mobile Home Park Expansion	Modification of existing condition of approval to allow for the development of three new mobile home sites.	5540 W Fifth St, Oxnard	0.83	Approved
3	Avalon Homes Subdivision	Coastal Development Permit for 64 single-family homes and a tentative tract map for 16 parcels (4 houses per parcel) on an 8.1-acre property.	Catamaran St, Oxnard	1.34	Proposed - City currently preparing Draft EIR
4	Anacapa Townhomes	Coastal Development Permit for 70 condominiums in 5 buildings on a 3.5 acre property, and variance for setbacks.	5001 W Wooley Rd, Oxnard	1.44	Plan Check - On hold due to lack of funds. Owner may sell project.
5	Rancho Victoria Plaza Shopping Center	Major modification to revise site plan and architecture for approved shopping center, and revision to approved tentative subdivision map to create and accommodate 11 commercial buildings on 11 separate parcels.	3600 & 3700 W. Fifth St, Oxnard	2.00	Plan Check
6	Victoria/Hemlock	116 condominium dwelling units.	1830 S Victoria Ave, Oxnard	2.48	Plan Check
7	Holiday Inn Express Hotel (PROJ-7630)	40-room addition to existing Holiday Inn Express & Suites Hotel, consisting of 3 stories over 23,961 sq. ft.	1080 Navigator Dr, Ventura	2.64	Approved
8	Sondermann-Ring - Amendment (PROJ-6237)	300 Apartment Units and 20,292 sq. ft. commercial retail. Includes private indoor and outdoor recreational facilities and 2.44-acre park	Ventura Harbor adjacent to Anchors Way & Navigator Dr,	2.74	All planning approvals

Label ID #	Project Title	Description	Location	Distance to Project (Miles)	Status
		and waterfront promenade (3 stories).	Ventura		
9	Teal Club Specific Plan	990 residential units of varying density, single-family, townhomes, condominium, and apartment units; 21 ac. community park; 8 ac. school site; 60,000 sq. ft. mixed use and retail; 132,000 sq. ft. business research park; 1 ac. fire station site.	SE corner of Doris Ave and N Patterson Rd, Oxnard	2.84	Resubmitted; Draft EIR in preparation.
10	Ventura Harbor Marina and Yacht Yard Expansion	Increase number of boat slips from 40 to 80 (40 new boat slips). Expansion involves removing the existing dock structure, concrete ramps, a portion of the existing pier, and fuel docks; construction of expanded dock structure; relocation of fuel dock; onshore parking improvements; and other related facility improvements. Expanded dock would extend further into main channel of Ventura Harbor, but consistent with June 2014 Ventura Port District Commission channel limits. Parking improvements require removal of several mature palm trees and other landscape elements.	Anchors Way Dr/ Beachmont St, Oxnard	3.04	Mitigated Negative Declaration published Aug. 2015.
11	Victoria Corporate Center (PROJ-03617)	7 single-story industrial office buildings.	NE corner Victoria Ave and Olivas Park Dr, Ventura	3.28	Phased construction (1 building at a time). Amendment for first building approved Oct.2015. Earliest estimate to break ground on first building spring 2016.
12	Silver Bay Foods (PROJ-7318)	2-story fish processing building 62,000 sq. ft.	Transport St, Ventura	3.38	Plan check
13	Kaiser (PROJ-8479)	72,000 sq. ft. medical center.	NW corner Market St and Valentine Rd, Ventura	3.71	In Planning Process

Label ID #	Project Title	Description	Location	Distance to Project (Miles)	Status
14	Golf Course Self Storage (PROJ-8647)	Self-storage facility.	Golf Course Dr and Leland St, Ventura	3.78	Proposed
15	Oralia's Bakery	1825 sq. ft. addition to existing bakery, landscaping, site improvements.	942 W Wooley Rd, Oxnard	3.86	Plan Check
16	Bruton Industries Group Inc.	Two-story 6,400 sq. ft. office building.	4107 E Main St, Ventura	3.89	All planning approvals
17	Olivas Park Drive Extension Project	(1) Extend Olivas Park Drive as 4-lane Secondary Arterial between Golf Course Dr and Auto Center Dr; (2) construct levee/floodwall approximately 5,400 linear ft. along north side of Santa Clara River that terminates 350 feet S of Southern Pacific Railroad; (3) General Plan amendments for land use changes for parcels within 139-acre project boundary, (4) Specific Plan amendment to revise boundaries of Auto Center Specific Plan; and (5) zone changes for amendment to revise boundaries of Auto Center Specific Plan; and (5) zone changes for parcels within project boundaries. Project also includes a pre-zone and annexation of one county parcel. Proposed zoning and land use amendments could accommodate maximum of 1,258,000 sq. ft. commercial and 75,000 sq. ft. industrial. Roadway extension transition to join existing improvements at Johnson Dr/U.S. 101 southbound ramps interchange. No improvements other than the transition proposed as part of this project at Johnson Dr/U.S. 101 interchange. Montalvo Community Services District (MCSD) to abandon and remove existing MCSD wastewater treatment plant components and wastewater treated at this facility diverted to city of Oxnard's wastewater facility.	Between Golf Course Dr and Johnson Dr, Ventura	3.89	LAFCO hearing Sept. 16, 2015
18	KIA Dealer Addition (PROJ-8641)	3,382 sq. ft. addition and building remodel.	6424 Auto Center Dr, Ventura	3.92	Proposed
19	Marriott-Residence Inn (PROJ-5616)	New four-story hotel with 128 Rooms covering 87,000 sq. ft.	770 S Seaward Ave, Ventura	3.94	Plan Check

Label ID #	Project Title	Description	Location	Distance to Project (Miles)	Status
20	Union Bank	4,860 sq. ft. bank.	NE corner Mills and Main St, Ventura	3.95	Plan Check
21	Santa Clara River Levee Improvements Downstream of Union Pacific Railroad (SCR-3) Project	Structural improvements to existing SCR-3 levee for FEMA certification. Between Bailard Landfill and N Ventura Rd two options considered. Option 1A (Full Levee System) adds fill material and riprap to raise existing levee (8,875 feet) with one tie-in to Bailard Landfill. Option 1B (Minimum Levee System) adds fill material along portion of existing levee (3,575 feet), with tie-ins to Bailard, Coastal, and Santa Clara Landfills. Fill in existing River Ridge Golf Course swale. Between N Ventura Rd and UPRR bridge (Reach 4), construct 950-foot long floodwall on river side of road with visible height of 6 feet; install flood gate across N Ventura Rd; and construct 4- to 6-foot floodwall south side of N Ventura Rd for 860 ft.	N Ventura Rd, N of W Vineyard Ave, Oxnard	3.95	Unknown
22	Global Building	Four new commercial buildings (3,000 sq. ft.)	S Mills Rd, Ventura	3.96	Plan Check
23	Broome (The Grove) (PROJ-00723)	198-250 apartment units, courtyard. Stacked units consisting of 2.5 stories.	Vacant land between Copland & Telephone Rd, between the 126 and 101 Freeways, Ventura	3.96	Proposed
24	Anastasi Dev. (PROJ-00756)	138 Condominiums and 20,230 sq. ft. of mixed use commercial (3-stories).	SW corner of Seaward Ave and Harbor Blvd, Ventura	4.03	All planning approvals
25	The Grove Specific Plan	Specific Plan and a Vesting Tentative Tract Map enabling future development of residential neighborhood ranging between 200 and 250 dwellings on approximately 26.51 acres (density of 9.43 per units per acre) bounded by Thille Community Neighborhood, on south by Telephone Rd and Copland D, and on west by La Posada mobile home park, and farther to west by 101/126 highway interchange. Property currently within unincorporated area, but within the city of Ventura's Sphere of Interest.	Thille St and Copland Dr, Ventura	4.15	Unknown

Label ID #	Project Title	Description	Location	Distance to Project (Miles)	Status
26	Island View Apartments-Westwood Communities (PROJ-2008)	Four-story apartment complex with 154 units.	Alameda at 8th St behind Montalvo Square, Ventura	4.15	Under construction
27	Ravello Holdings (PROJ-6811)	5-story mixed-use structure with 306 apartment units and 10,000 sq. ft. commercial.	Johnson Dr and Northbank Dr, Ventura	4.20	Proposed
28	Vallero (PROJ-4627)	912 sq ft. automatic carwash and canopy.	2121 Harbor Blvd, Ventura	4.24	All planning approvals
29	The Lofts Affordable Senior Apartments	Conversion of existing 52,000 sq. ft. industrial building into 115 affordable senior apartments.	300 W Ninth St, Oxnard	4.26	Approved
30	Paseo Azteca	New multi-tenant retail building with 10 spaces.	618 South A St, Oxnard	4.30	Plan Check
31	Castillo Del Sol (PROJ-6187)	40 affordable housing units for special needs residents, on-site manager's unit, and supportive services.	3005 E Main St, Ventura	4.33	Under Construction
32	Surf Thru Carwash	Construct drive-thru car wash: 3,831 sq. ft. car wash building, 591 sq. ft. pay building, self-service vacuum stations on 1.57 acre lot.	1971 N Oxnard Blvd, Oxnard	4.35	Proposed
33	Chemical Building	New building to hold 2 chemical tanks to treat desalted water.	251 S Hayes Ave, Oxnard	4.38	Approved
34	Ventura Ophthalmology	10,313 sq. ft. medical ophthalmology building.	3114 Telegraph Rd , Ventura	4.39	In Planning Process
35	Tentative Subdivision Map for Tract 5745 for Approved Village Specific Plan	Final Tentative Subdivision Map for Tract No. 5745 request to subdivide The Village Specific Plan area in substantial conformance with previously adopted specific plan by creating 17 numbered lots and 19 lettered lots for development, public improvements, and open space.	Oxnard Blvd and Wagon Wheel Rd, Oxnard	4.40	Unknown
36	Community Memorial Hospital Parking Structure	5 1/2-story parking structure with 571 parking spaces and 1,399 sq. ft. retail liner.	City Parking Lot, N of 29 N Brent St and S of new Community Memorial Hospital building, Ventura	4.45	Proposed
37	Wagon Wheel Development Project (PA18)	219 market-rate apartments, recreation/meeting room, tot lot, and landscaped paseos. Construct commercial area (16,303 sq. ft.)	Wagon Wheel Rd and Winchester Dr, Oxnard	4.50	Proposed

Label ID #	Project Title	Description	Location	Distance to Project (Miles)	Status
38	Community Memorial Hospital	New hospital building. Adaptive reuse of existing hospital (121,000 sq. ft.). New street extensions, new public plaza.	S of Loma Vista Rd, W of Brent St, and N of Main St, Ventura	4.54	Under construction
39	Redevelopment of the Food 4 Less Site	Redevelop 14.47 acre Food 4 Less site, including demolition of former Target building, construction of new building to be occupied by Food 4 Less, fuel station associated with Food 4 Less, rehabilitation of existing on-site buildings, and 2 new retail buildings, for net building area of 159,954 sq. ft.	150 W Esplanade Dr, Oxnard	4.59	Under construction
40	Skyview Apartment Complex	240-unit affordable (100% affordable) housing apartment.	1250 S Oxnard Blvd, Oxnard	4.65	Proposed
41	Third Tower	15-story office tower in Esplanade Financial Square. Approx. 300,000 sq. ft.	E Esplanade Dr, Oxnard	4.70	Approved
42	RiverPark Senior	166,000 sq. ft., 136-unit senior living facility.	SE corner of Ventura Rd and Clyde River Dr, Oxnard	4.78	Proposed
43	Goldberg (PROJ-04296)	Five condominiums.	1837 E Thompson Blvd, Ventura	4.79	All planning approvals
44	Hughes (PROJ-04590)	Three condominiums.	1511 Vista Del Mar Dr, Ventura	4.79	All planning approvals
45	The Container Store	Single-story, 25,000 sq. ft. commercial building within "The Collection" at "RiverPark Shopping Center".	450 Town Center Dr, Oxnard	4.81	Under construction
46	Special Use Permit and Zone Variance	Employee parking lot, trash enclosure, and lunch area within 15,630 sq. ft. undeveloped site.	931 Richmond Ave, Oxnard	4.84	Plan Check
47	Café Scoop (PROJ-00687)	10 condominium units and 5,554 sq. ft. commercial space.	2170 E Main St, Ventura	4.84	All planning approvals
48	Buildings 1100A and B The Collection at RiverPark	40,000 sq. ft, single-story, multi-tenant commercial building within The Collection at RiverPark Shopping Center.	601-691 Collection Blvd, Oxnard	4.85	Plan Check
49	Thompson Village (PROJ-7910)	26 units of multi-family residential.	1570 E Thompson Blvd, Ventura	4.87	Proposed
50	RiverPark Retail	Single-story, multi-tenant commercial building with drive thru for WSS Shoe Warehouse and Krispy Kreme Doughnuts.	Riverpark Blvd and Vineyard Ave, Oxnard	4.88	Plan Check

Label ID #	Project Title	Description	Location	Distance to Project (Miles)	Status
51	Ventura/Vineyard Homes	152 residential dwelling units.	N corner Riverpark Blvd and E Vineyard Ave, Oxnard	4.88	Plan Check
52	Las Cortes	301 affordable housing units, 4 manager's units, parks, streets and sidewalks, landscaping and community buildings	Near Colonia Park, Oxnard	4.91	Phase 1 Under Review
53	Oxnard Crossroads	Two new commercial buildings.	481-491 Ventura Blvd, Oxnard	4.94	Approved
54	Sanjon Village (PROJ-7224)	34 condominium units.	SW corner of Thompson Blvd and Sanjon Rd, Ventura	4.99	In Planning Process
55	RiverPark: Sonata Apartments	53 apartments (3 story buildings) with garages and recreation facilities.	2905 Danvers River St, Oxnard	5.03	Under construction
56	RiverPark: Tempo Apartments	235 apartments (3 story buildings) with garages and recreation facilities.	443 Forest Park Blvd, Oxnard	5.05	Under construction
57	Hemlock Apartments (PROJ-1126)	23 apartments.	264/274 S Hemlock St, Ventura	5.06	Plan Check
58	Gill's Onions Plant Expansion	Three new buildings and improvements associated with parking, stormwater and street improvements for existing food processing and manufacturing facility operating within a 13.72-acre site.	1051 S Pacific Ave, Oxnard	5.06	Plan Check
59	Terraza de Las Cortes	Four 16-unit multifamily buildings with total of 64 affordable apartments, and one 1,080 sq. ft. community building, parking and landscaping on a 3.56 acre site.	Carmelita Ct, Oxnard	5.06	Under construction
60	Channel Islands Business Center	90,414 sq. ft. speculative industrial building.	1425 Mariner Dr, Oxnard	5.09	Approved
61	Rincon Recycling	Convert warehouse to recycling facility.	720 Pacific Ave, Oxnard	5.10	Under construction
62	World Oil (PROJ-6018)	Three apartment units and 2,438 sq. ft. of commercial space.	1571 E Main St, Ventura	5.14	In Planning Process
63	Trailer Hotel (PROJ-7213)	New 34 unit airstream trailer park.	398 S Ash St, Ventura	5.16	All planning approvals
64	Saint John the Baptist Coptic	1-story church facility on a vacant 35,000 sq. ft. lot.	1200 Pacific Ave, Oxnard	5.17	Plan Check

Label ID #	Project Title	Description	Location	Distance to Project (Miles)	Status
	Church				
65	Santa Clara Apartments (PROJ-6263)	Eight apartments.	1254 & 1268 E Santa Clara St, Ventura	5.18	All planning approvals
66	The Bluffs at Vista Del Mar	Luxury apartment community with clubhouse, open space areas, and bluff-top public promenade.	Triangle Site - Ash St and Front St, Ventura	5.19	In Planning Process
67	J Street Drain Project	Increased flow capacity of existing J Street Drain to accommodate runoff from 100-year storm event, reducing potential flooding of residential and commercial areas in cities of Oxnard and Port Hueneme.	J St and Redwood Ave to S of Hueneme Rd, Oxnard and Port Hueneme	5.19	Approved
68	Rexford (PROJ-03198)	25 condominiums.	918 E Thompson Blvd, Ventura	5.21	All planning approvals
69	Amoretti	27,760 sq. ft. industrial building and lot merger to combine two lots into one.	1551 Pacific Ave, Oxnard	5.21	Under construction
70	Westerly II RiverPark Dist H-2	69 single family detached homes.	Nile River Dr, Oxnard	5.22	Plan Check
71	Veranda RiverPark Dist H-3	95 detached single family homes.	Owens River Dr, Oxnard	5.26	Plan Check
72	Best Western (PROJ-6702)	Remodel of 2 existing motel rooms into a gym and meeting room and replace the 2 rooms within a new 2nd story addition. All occurring in 555 sq. ft. area.	708 E Thompson Blvd, Ventura	5.27	Proposed
73	Trinity Plaza	Construct 7,400 sq. ft. church on 43,136 sq. ft. proposed parcel; a 2,999 sq. ft. fast food (Carl's Jr) restaurant with drive thru on 31,768 sq. ft. proposed parcel; and a 6,100 sq. ft. multi-tenant retail building on 26,094 sq. ft. proposed parcel.	SE corner of N Rose Ave and Camino Del Sol, Oxnard	5.29	Approved
74	St. Paul Baptist Church	18,000 square foot sanctuary with 788 seats.	1777 Statham Blvd, Oxnard	5.34	Plan Check
75	Hilton - Harbor and Figueroa (PROJ-8165)	160 room hotel: 5,242 sq. ft. retail space, a 5,337 sq. ft. restaurant, and a 1,555 sq. ft. upper roof lounge (covered area only). Total project 4-stories and 156,160 sq. ft.	SE corner Harbor & Figueroa, Ventura	5.40	Proposed

Label ID #	Project Title	Description	Location	Distance to Project (Miles)	Status
76	Starbucks with Drive Thru	Single-story Starbucks coffee shop with a drive thru on a 20,603 sq. ft. lot (after lot merger).	1921 N Rose Ave, Oxnard	5.40	Proposed
77	Matilija Investment Group (PROJ-04315)	15 condominiums.	11 S Ash St, Ventura	5.41	In Plan Check
78	Ventura Downtown Housing (PROJ-5085)	5-story, 255 unit, apartment complex.	120 E Santa Clara St, Ventura	5.43	Proposed
79	Lion's Gate Annex	Self-storage & RV storage.	2751 Statham Blvd, Oxnard	5.44	Approved
80	Daly Project: Channel Islands	72 attached apartments (15% affordable).	E Channel Islands Blvd and Statham Blvd, Oxnard	5.49	Proposed
81	V2V Ventures	34 condominium units and 6,175 sq. ft. commercial space.	300 E Santa Clara St, Ventura	5.51	All planning approvals
82	The Axis (Sienna) RiverPark Dist H-5	91 detached single family homes.	Tiber River Way, Oxnard	5.53	Under construction
83	The District (Morning View) RiverPark Dist H-4	113 detached single family homes.	Tiber River Way, Oxnard	5.53	Under construction
84	Retail building	One-story 11,400 sq. ft. retail building.	105 W. Pleasant Valley Rd, Oxnard	5.58	Proposed
85	Mar-Y-Cel (Previously PROJ-00823)	138 units mixed use commercial (6,142 sq. ft.).	NE corner Thompson Blvd and Ventura, Ventura	5.59	All planning approvals
86	Anacapa Courts (PROJ-8105)	25 condominium units and 4,250 sq. ft. retail space.	299 E Main St, Ventura	5.61	In Planning Process
87	La Barranca (PROJ-6098)	9 single family residences.	5533 Foothill Rd, Ventura	5.65	Under construction
88	Santa Clara Courts (PROJ-7290)	24 condominium units.	72 W Santa Clara St, Ventura	5.66	Under construction
89	Pacific Water Conditioning	Single story 25,158 sq. ft. warehouse building.	2040 Eastman Ave, Oxnard	5.69	Under construction
90	Condominiums (PROJ-03676)	16 condominium units and 1,200 sq ft. commercial space.	SW corner of Palm and Poli St., Ventura	5.70	All planning approvals
91	Fire Station No. 8	New 13,036 sq. ft. fire station and a 15,960 sq. ft. training yard. Zone change to Community Reserve (C-R), additional height with a special	3000 S Rose Ave, Oxnard	5.77	Under construction

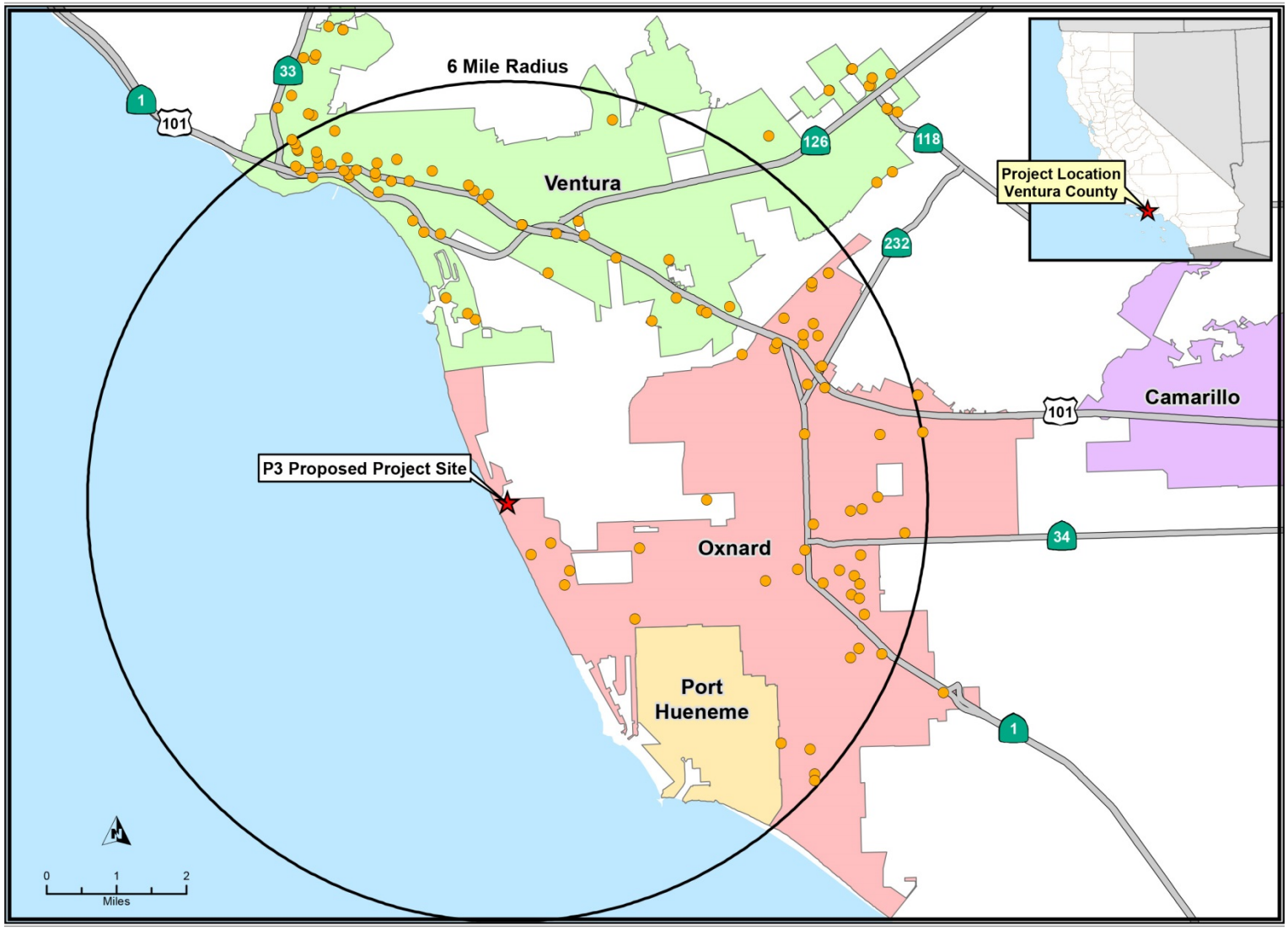
Label ID #	Project Title	Description	Location	Distance to Project (Miles)	Status
		use permit, and a lot line adjustment for 3 parcels.			
92	Raven Ridge (PROJ-8101)	30 condominiums.	117 N Ventura Ave, Ventura	5.84	In Planning Process
93	Ventura Botanical Gardens (PROJ-5810)	New botanical gardens and support facilities within Grant Park.	Grant Park, Ventura	5.84	All planning approvals
94	Vista Pacifica	Multi-family condominium complex with 40 units in 5 buildings with community park.	5527 Saviers Rd, Oxnard	5.86	Proposed
95	Ventura Cannery Apartments	78 condos and 2,156 sq. ft. mixed use commercial.	130 N Garden St, Ventura	5.86	Under Construction
96	Emerald Professional Bldg.	Two-Story Commercial Building.	5587 Saviers Rd, Oxnard	5.92	Approved
97	Matilija (PROJ-03865)	28 condominiums.	221 N. Garden St, Ventura	5.94	All planning approvals
98	Pacifica Senior Living at East Village	Convert existing 57-room hotel to 80 assisted living and memory care senior living facility. Addition of 10,392 sq. ft. memory care wing, 3,556 sq ft. assisted living, and 2,020 sq. ft. kitchen/dining area. Site is 2.26 ac and existing building with proposed addition is 54,073 sq. ft.	2211 E Gonzales Rd, Oxnard	6.01	Under construction
99	New Apartments (PROJ-7920)	3 new apartment units.	162 W Park Row Ave, Ventura	6.01	In Planning Process
100	Gold Coast Maintenance Facility	Construct an operations and maintenance facility: 49,533 sq. ft. facility including 17,935 sq. ft. office building, 24,330 sq. ft. maintenance building, 2,105 sq. ft. fuel service station with fueling bays, and 5,163 sq. ft. wash building. Outdoor parking for 125 buses with landscaping and parking improvements.	NW corner of Auto Center Dr and Paseo Mercado, Oxnard	6.04	Proposed
101	Chapman, Mike (PROJ-04691)	7 apartments	95 E Ramona St, Ventura	6.18	Under Construction-Duplex constructed, 5 units pending construction
102	4 Way Meat Market	2,039 sq. ft. office.	724 N Ventura Ave, Ventura	6.22	In Planning Process
103	Voelker Property	18 single family homes.	8324 Telegraph Rd,	6.41	In Planning

Label ID #	Project Title	Description	Location	Distance to Project (Miles)	Status
	(PROJ-8150)		Ventura		Process
104	Riverside Apartments (PROJ-7529)	2-story, 24-Unit apartment complex.	691 Riverside St, Ventura	6.51	Proposed
105	Westview Village (PROJ-7951)	Redevelopment of 180 public housing apartments and addition of 140 new apartments.	Between Barnett and Vince and Riverside and Snow streets, Ventura	6.56	Proposed
106	Coastal Apartment Homes and Coastal Senior/Assisted Living	Approximately 101 apartments and 70 unit senior living units.	N corner of Butler Rd and E Pleasant Valley Rd, Oxnard	6.78	Proposed
107	New Urban Ventures (PROJ-04182)	80 condominium units and 1,779 sq. ft. commercial space.	1995 N Ventura Ave, Ventura	6.90	All planning approvals
108	Logue (Revision to Project-1200) PROJ-7125	Mixed use structure with 125 Condominium Units and 7,300 sq. ft. commercial space.	2055 N Ventura Ave, Ventura	6.94	All planning approvals
109	Northbank (PROJ-6270)	117 single family, 31 affordable for sale triplex/quadplex, and 50 apartments.	Eastern end of N Bank Dr, Ventura	6.96	In Planning Process
110	Industrial Building	10,200 sq. ft. industrial building.	255 W Stanley Ave, Ventura	6.98	In Planning Process
111	Westside Renaissance (PROJ-04154)	120 single family residence and 36 condominiums, three stories.	2686 N. Ventura Ave, Ventura	7.14	All planning approvals
112	Westside Renaissance (PROJ-4677)	50 affordable senior apartments.	2686 N Ventura Ave, Ventura	7.14	Proposed
113	Westside Villas	35 condominium units, live/work units and 1,573 sq. ft. mixed use commercial.	N Ventura Ave, Ventura	7.24	In Planning Process
114	Enclave at North Bank (PROJ-4184)	Vesting Tentative Map for subdivision of 12.61 acres into 84 residential lots with two open space lots. Design Review and Density Bonus Concessions for 91 residential units with 84 single-family units and 7 duplexes with adjacent park space (EIR- 5-12-10586)(EIR-2473)	SE corner Saticoy Ave and N Bank Dr, Ventura	7.27	In Plan Check

Label ID #	Project Title	Description	Location	Distance to Project (Miles)	Status
115	The Farm; UC Hansen SP (PROJ-8446)	131 single family homes, 34 townhomes, 2 parks and 3 mini parks. (PROJ-03826 for affordable component of this project)	SE corner of Telegraph Rd and Saticoy Ave, Ventura	7.44	In Planning Process
116	UC Hansen Trust SP (PROJ-03826)	24 farm worker apartments as part of specific plan (see PROJ-8446)	SE corner Saticoy and Telegraph, Ventura	7.45	All planning approvals
117	Jenven Village SP Amendment (PROJ-1857)	51 condominium units.	SE of Well Rd and Darling Rd, Ventura	7.80	Under Construction
118	Darling Apartments	43 apartment and live/work units	Darling & Wells, Ventura	7.80	All planning approvals
119	Citrus II (PROJ-7772)	80-unit apartment complex.	S of Citrus/E of Wells Rd, Ventura	7.87	In Planning Process
120	Westwood/ Parklands (PROJ-03829)	216 detached homes and 110 attached homes.	SW corner Wells and Telegraph Rd, Ventura	7.87	All planning approvals
121	Citrus II (PROJ-8427)	78-unit 3-story apartment building.	11156-1172 Citrus Dr, Ventura	7.87	In Planning Process
122	Parklands Apartments (PROJ-4222)	173 apartment units with community building.	SW corner Telegraph Rd and Wells Rd, Ventura	7.88	In Plan Check
123	East Village Residential (PROJ-4154)	50 low income apartments.	Snapdragon and Los Angeles Ave, Ventura	7.90	Under construction
124	11101 Carlos Street (PROJ-7771)	47-unit apartment complex.	11101 Carlos St, Ventura	7.98	In Planning Process
125	Gisler Ranch Mixed Use (PROJ-8428)	Three-story mixed use with 43 apartments and 1,200 sq. ft. retail space.	11101 Carlos St, Ventura	7.98	In Planning Process
126	Citrus Place (PROJ-6355)	59 single family and 60 townhomes.	Citrus & Peach, Ventura	8.17	Under construction
127 not shown on map	North Pleasant Valley (NPV) Treatment Facility	Construction/operation of a groundwater treatment facility, including drilling and production of two new wells, installation of pipelines for distribution of raw well water, product water and brine. Facility would provide treated water to Camarillo's existing service area, with average design capacity of 7,500 acre feet year of production water.	Las Posas Rd/Lewis Rd, Camarillo	13.74	Unknown

Label ID #	Project Title	Description	Location	Distance to Project (Miles)	Status
128 not shown on map	East Area 1 Specific Plan Amendment	501 acres site for up to: (1) 1,500 residential dwelling units, (2) 240,000 sq. ft. commercial and light industrial, (3) 9.2 acres of civic uses for school facilities, and 225.3 acres open space and park uses.	Telegraph Rd and Padre Lane, Santa Paula	16.21	Unknown
129 not shown on map	Santa Barbara County Reliability Project	(1)Reconstruct existing 66 kV subtransmission facilities within existing and new utility rights-of-way between the existing Santa Clara Substation in Ventura County and the existing Carpinteria Substation located in the city of Carpinteria in Santa Barbara County (Segments 4 and 3B); (2) Modify subtransmission, substation, and/or telecommunications equipment within the existing Carpinteria, Casitas, Getty, Goleta, Ortega, Santa Barbara, Santa Clara, and Ventura Substations; and (3) Install fiber optic telecommunications equipment for the protection, monitoring and control of subtransmission and substation equipment along Segments 1,2, and 4 and at Carpinteria, Casitas, Santa Clara, and Ventura Substations.	City of Ventura, Ventura County to city of Carpenteria, Santa Barbara County	20.46	In review with CPUC. Final EIR published May 2015. Two erratas followed. Coastal development permit necessary from Santa Barbara County. Estimated 2 year construction
130 not shown on map	Moorpark Newbury 66 kV Subtransmission Line Project	New 66 kV subtransmission line and related facilities within portion of SCE's existing Moorpark-Ormond Beach 220 kV Transmission Line right-of-way (ROW) and portion of SCE's Moorpark-Newbury-Pharmacy 66 kV Subtransmission Line ROW. New subtransmission line between SCE's Moorpark Substation and Newbury Substation and construction of 1,200 ft. underground line, 5 miles new 66 kV line, 2 miles new 66 kV line within Moorpark-Newbury-Pharmacy 66 kV subtransmission line, and 1 mile new 66 kV subtransmission line into Newbury Substation.	E Los Angeles Ave, W Los Angeles Ave, and Gabbert Rd, Moorpark	20.67	Draft CPUC Decision published May 20, 2016. Final hearing June 23, 2016. Estimate July 2016 permit to construct at earliest. Estimated 10-month construction.

EXECUTIVE SUMMARY FIGURE 1
P3 Cumulative Projects Map



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: California Energy Commission, Open Street Map, and California Department of Transportation

ENVIRONMENTAL JUSTICE

The California Resources Agency recognizes that environmental justice (EJ) communities are commonly identified as those where residents are predominantly minorities or live below the poverty level; where residents have been excluded from the environmental policy setting or decision-making process; where they are subject to a disproportionate impact from one or more environmental hazards; and where residents experience disparate implementation of environmental regulations, requirements, practices, and activities in their communities. Environmental justice efforts attempt to address the inequities of environmental protection in these communities.

An EJ analysis is composed of the following:

- Identification of areas potentially affected by various emissions or impacts from a proposed project;
- Providing notice in appropriate languages (when possible) of the proposed project and opportunities for participation in public workshops to EJ communities;
- A determination of whether there is a significant population of minority persons, or persons below the poverty level living in an area potentially affected by the proposed project; and
- A determination of whether there may be a significant adverse impact on a population of minority persons or persons below the poverty level caused by the proposed project alone, or in combination with other existing and/or planned projects in the area.

California law defines EJ as “the fair treatment of people of all races, cultures and income with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies” (Gov. Code §65040.12; Pub. Resources Code, §§ 71000-71400). All departments, boards, commissions, conservancies and special programs of the Resources Agency must consider EJ in their decision-making process if their actions have an impact on the environment, environmental laws, or policies. Such actions that require EJ consideration may include:

- adopting regulations;
- enforcing environmental laws or regulations;
- making discretionary decisions or taking actions that affect the environment;
- providing funding for activities affecting the environment; and
- interacting with the public on environmental issues.

DEMOGRAPHIC SCREENING ANALYSIS

As part of its CEQA analysis for the Application for Certification for the P3, Energy Commission staff used 2010 U.S. Census data to identify the minority populations and the most recent U.S. Census data from the American Community Survey (ACS) to

identify below-poverty level populations within the six-mile radius of the P3[4]. The demographic screening is based on *Environmental Justice: Guidance Under the National Environmental Policy Act* (CEQ, 1997) and *Guidance for Incorporating Environmental Justice Concerns in EPA's Compliance Analyses* (US EPA, 1998), which provides staff with information on outreach and public involvement.

Socioeconomics Figure 1 shows the presence of an EJ population based on race and ethnicity within the six-mile radius of the P3 site. **Socioeconomics Table 3** shows that the cities of Oxnard and Port Hueneme have a higher percent of people living below the federal poverty level compared with those in Ventura County. Staff considers that the below-poverty-level population in the cities of Oxnard and Port Hueneme also constitutes an EJ population based on poverty. The **Socioeconomics** section of this document contains a full explanation of how staff determines the presence of EJ populations.

Staff in the 11 technical disciplines of Air Quality, Hazardous Materials Management, Land Use, Noise and Vibration, Public Health, Socioeconomics, Soil and Water Resources, Traffic and Transportation, Transmission Line Safety and Nuisance, Visual Resources, and Waste Management are required to consider the impacts of the P3 on the EJ population.

ADDITIONAL ENVIRONMENTAL JUSTICE POPULATION CONSIDERATIONS

Final Guidance for Incorporating Environmental Justice Concerns in EPA's Compliance Analyses (US EPA 1998) encourages outreach to community-based organizations and tribal governments to identify those minority groups who utilize or are dependent upon natural and cultural resources that could be potentially affected by the proposed action. The Public Advisor's Office is responsible for outreach to local communities affected by a project. Cultural Resources staff initiates consultations with tribal governments to discern whether a proposed energy facility may impact cultural resources and related Native American practices.

CONCLUSION

The Air Quality staff is continuing the development of mitigation measures to ensure the proposed Air Quality conditions of certification would include suitable mitigation to reduce the P3's direct and cumulative air quality impacts to a less than significant level. These mitigation measures for particulate matter less than 10 microns (PM10) and sulfur dioxide (SO_2) will be further discussed and analyzed in the Final Staff Assessment (FSA). Implementation of these conditions would reduce air quality impacts to less than significant for any population in the project's six-mile radius, including the EJ population.

The Hazardous Materials Management, Land Use, Noise and Vibration, Public Health, Socioeconomics, Soil and Water Resources, Traffic and Transportation, Transmission Line Safety and Nuisance, Visual Resources, and Waste Management staff conclude

[4] Demographic screening data is presented in the **Socioeconomics** section.

that the P3, either as proposed or conditioned through conditions of certification, would result in less than significant impacts related to their technical areas and therefore have a less than significant impact to any population in the project's six-mile radius, including the EJ population.

REFERENCES

CEQ 1997 – Council on Environmental Quality. *Environmental Justice: Guidance Under the National Environmental Policy Act. December 10,* 1997, <http://www.epa.gov/compliance/ej/resources/policy/ej_guidance_nepa_ceq1297.pdf>.

PPP 2015a – NRG Energy Center Oxnard LLC/John Chillemi (TN 204219-1 – 204220-14). Application for Certification, dated April 13, 2015. Submitted to Robert Oglesby/CEC/Docket Unit on April 16, 2015.

PPP 2015y –Latham & Watkins LLP Project Enhancement and Refinement, Demolition of Mandalay Generating Station Units 1 and 2 (TN 206698). Submitted on November 19, 2015. CEC/Docket Unit on November 19, 2015.

PPP 2015ll –Applicant's Alternative Site Summary Paul Kihm Lathem & Watkins LLP (TN 207096). Submitted on December 21, 2015. CEC/Docket Unit on December 21, 2015.

PPP 2015mm -Socioeconomics Revised Environmental Justice Review Latham & Watkins LLP (TN 207111). December 23, 2015. CEC/Docket Unit on December 23, 2015.

US EPA 1998 – United States Environmental Protection Agency, *Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses*. April 1998. <http://www.epa.gov/compliance/ej/resources/policy/ej_guidance_nepa_epa0498.pdf>.

INTRODUCTION

Jon R. Hilliard, AICP

PURPOSE OF THIS REPORT

This Preliminary Staff Assessment (PSA) is the California Energy Commission staff's independent analysis of the proposed Puente Power Project (P3, or project). This PSA is a staff document. It is not promulgated by the siting Committee (two Energy Commission Commissioners who have been assigned to this project), nor is it a draft decision.

The PSA is an informational document and 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 (conditions) under which the project should be constructed and operated, if it is certified; and
- project alternatives.

The analyses contained in this PSA are based upon information from the: 1) Application for Certification (AFC), 2) responses to data requests, 3) supplementary information from the applicant, federal, state and local agencies, interested organizations and individuals, 4) existing documents and publications, 5) independent research by Commission staff, and 6) comments at public hearings and workshops.

The PSA presents preliminary conclusions about potential environmental impacts and conformity with laws, ordinances, regulations and standards (LORS), as well as proposed conditions that apply to the design, construction, operation and closure of the project. The analyses for most technical areas include discussions of proposed conditions. The conditions contain staff's recommended measures to mitigate the project's environmental impacts and to ensure conformance with LORS. Each proposed conditions is followed by a proposed means of "verification" to ensure the conditions 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 begins with an Executive Summary, Introduction, and Project Description. The next 20 chapters contain the environmental, engineering, public health and safety and alternatives analyses of the proposed project. The following chapter outlines the standards for assuring compliance with the Energy Commission license during project development, operation and closure. The final chapter is a list of staff that contributed to preparing this PSA.

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

- applicable LORS;
- the regional and site-specific setting;
- project specific and cumulative impacts;
- mitigation measures;
- closure requirements;
- conclusions and recommendations; and
- conditions of certification for demolition, 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 AFCs to assess potential environmental and engineering 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). In addition, this section requires staff to 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. Staff is required to develop a compliance plan (coordinated with other agencies) to ensure that applicable LORS 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.

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

Energy Commission regulations establish a mandatory 30-day public comment period that follows publication of the PSA. In the case of P3, the Committee has issued a scheduling order that provides a longer, 45-day, comment period. (Cal. Code Regs., tit. 20, § 1742(c).) The comment period is used to: 1) elicit input on the PSA analysis, 2) resolve issues between parties to the project and, 3) where consensus on issues exists, narrow the scope of issues to be adjudicated in subsequent evidentiary hearings. During this time, staff will conduct one or more workshops to discuss the conclusions, proposed mitigation measures, and verification measures in the PSA. Based on the workshop dialogue and any written comments received, staff may refine its analysis, correct any errors, and finalize conditions of certification 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 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 any 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 P3 siting review include the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, California Coastal Commission, State Lands Commission, State Water Resources Control Board/Los Angeles Regional Water Quality Control Board, California Department of Fish and Wildlife, the Ventura County Air Pollution Control District, Ventura County, and the City of Oxnard.

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 April 24, 2015, Energy Commission staff sent the P3 AFC to local libraries in Oxnard, and to the state libraries in Eureka, Sacramento, Fresno, San Francisco, Los Angeles and San Diego.

INITIAL OUTREACH EFFORTS

Energy Commission staff and the Public Advisor's Office (PAO) coordinated closely on public outreach early in the review process. A Notice of Receipt of the AFC and Notice of Public participation were docketed and mailed to the project mail list on April 27, 2015. Public notices for the project in both English and Spanish were published in local newspapers on May 24, 2015 and May 28, 2015. The PAO made a presentation to the Oxnard City Council on July 14, 2015, outlining the Commission's review process and avenues for public participation.

The PAO contacted local elected officials, , Native American tribal groups, and community groups, including Central Coast United for a Sustainable Economy (CAUSE), Mixteco Indigena Community Organizing Project (MICOP), , and the United Farm Workers. PAO also published notices in English and Spanish in the local newspapers prior to the August 27, 2015 Site Visit, Informational Hearing and Environmental Scoping Meeting. Spanish-language interpreters facilitated public comment at the hearing.

Energy Commission staff will reach out and encourage community groups to participate during the PSA public comment period and at the PSA workshop.

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, and the property owners list

has been augmented to include the surrounding political jurisdictions, school districts, state and federal agencies, and interest groups.

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 Government Code, sections 71000-71400 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 the P3, are discussed in the **EXECUTIVE SUMMARY**. Environmental Justice is analyzed for the area surrounding P3 in the **SOCIOECONOMICS** section of this PSA.

PROJECT DESCRIPTION

Jon R. Hilliard, AICP

INTRODUCTION

The Preliminary Staff Assessment (PSA) for the Puente Power Project (P3) contains 21 technical analyses of potential environmental effects and engineering factors associated with the development and operation of the project. The owner and applicant, NRG Energy Center Oxnard LLC, an indirect, wholly owned subsidiary of NRG Energy, Inc., proposes to construct a 262-megawatt (MW) gas-powered electrical generating facility and related site improvements on a 3-acre portion of the 36 acre Mandalay Generating Station (MGS) site located at 393 North Harbor Boulevard in the coastal city of Oxnard, Ventura County. This section includes information and figures from the owner's Application for Certification (AFC) to the California Energy Commission and supplemental information filed in support of the AFC, which are part of the project docket and can be accessed by selecting "Dockets for this Proceeding" at the following web address for reference: http://www.energy.ca.gov/sitingcases/puente/index.html.

PROJECT OVERVIEW

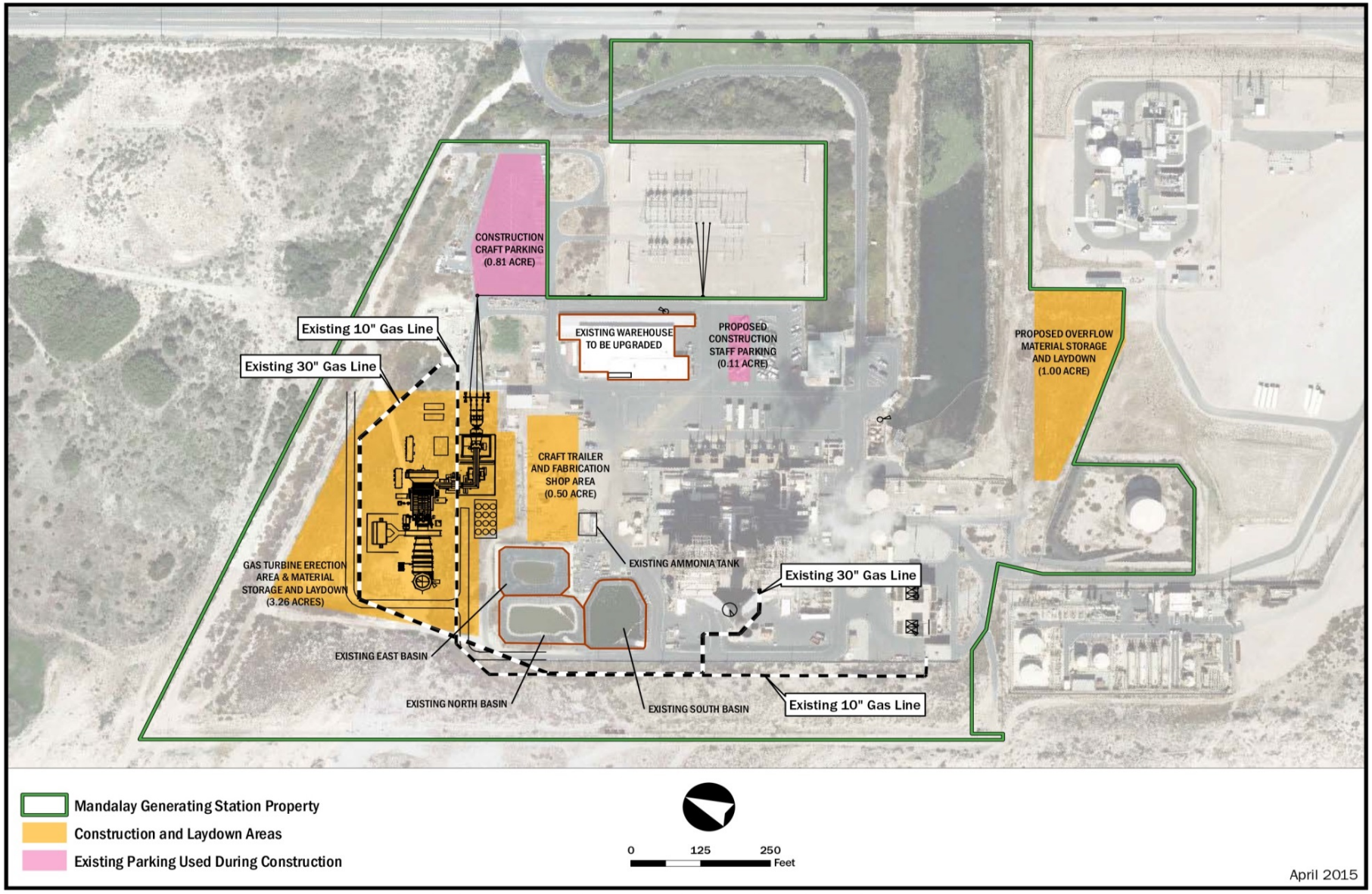
P3 would replace two aging gas-fired steam-generating units (Units 1 and 2) at the existing MGS with a new General Electric (GE) Frame 7HA.01 single-fuel combustion turbine generator (CTG) and associated auxiliaries. P3 would be developed on approximately 3 acres of previously disturbed vacant brownfield land located within the existing boundaries of MGS. All construction laydown and parking areas would also be within the existing MGS site. To minimize environmental impacts associated with the construction of new operations, maintenance, warehouse, and transmission interconnections, existing ancillary systems would be upgraded and repurposed to serve P3 to the extent feasible. If P3 is approved and developed, MGS Units 1 and 2 would be retired by the completion of commissioning of P3. A Site Plan of the project is attached as Figure 1.

The generator output from P3 would be stepped-up to 220-kilovolt (kV) transmission voltage from the CTG operating in simple-cycle mode. The power block would provide peaking power and is expected to operate at up to approximately 30 percent capacity factor. Full-load output of the unit under expected operating and ambient (temperature/ relative humidity) conditions would range from approximately 241 net megawatts (MW) to a peak of 271 net MW. The new generating unit would tie into the existing Mandalay Switchyard, owned by Southern California Edison (SCE), using one of the breaker positions that would be vacated when MGS Units 1 and 2 are removed from service and demolished.

P3 would use natural gas supplied by Southern California Gas Company (SoCalGas) and connect to a new gas metering station adjacent to the P3 site. A new natural gas pipeline of approximately 500 feet would extend from the new gas metering station through a new gas compressor to the combustion turbine interface.

PROJECT DESCRIPTION - FIGURE 1

Puente Power Project - Site Plan



CALIFORNIA ENERGY COMMISSION-SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 2.1-1

Total estimated annual water use for P3 is expected to be approximately 16 acre-feet per year (AFY). The processs water and potable water source will be water from the City of Oxnard; the point of connection would be to the existing MGS potable water supply. Sanitary wastewater would be discharged to the MGS existing septic system. Process wastewater would be stored in one of the MGS existing basins, and ultimately discharged to the ocean via an existing outfall. Stormwater runoff from the project site would be directed through new stormwater conveyance lines to either the service water tank for reuse (to offset potable water use), or to the existing North and South retention basins north of MGS Units 1 and 2 that discharge through the existing outfall to the Pacific Ocean.

Construction of P3 is expected to occur over a 21-month period, from October 2018 through June 2020. Construction is expected to cost approximately $235 to $270 million (in 2015 dollars). Commercial operation of P3 is expected by June 2020, with an assumed operating life of 30 years. Decommissioning of MGS Units 1 and 2 is anticipated to begin by December 2020, and take approximately 6 months. Demolition of MGS Units 1 and 2 and other related structures would commence by late 2021 and take approximately 15 months.

PROJECT SETTING, LOCATION AND SITE DESCRIPTION

A Project Location Map is provided in the attached Figure 2. The project is in an oceanfront area containing a mix of energy generation, oil storage and conveyance, agricultural, recreational and conservation land uses. The immediate area includes SCE-owned power-generating and transmission facilities. P3 will be sited on approximately 3 acres of the northern portion of the existing MGS property, which is identified as Assessor's Parcel Number 183-0-022-025. The project site is part of the historic Rio De Santa Clara Mexican Land Grant, being un-sectioned land outside of the township - range system, but near to Township 2 North, Range 23 West, on the U.S. Geological Survey Oxnard/Oxnard OE Topographic Map Quadrangles.

The site is bordered by sand dunes and the Pacific Ocean to the west, McGrath Lake State Park and land owned by SunCal to the north, industrial uses to the north, south, and east (consisting of petroleum distribution, and electric power and distribution facilities), and agricultural uses farther to the east across Harbor Boulevard. The closest existing residential neighborhood is the Oxnard Shores Mobile Home Park, approximately 0.75 mile (or approximately 3,900 feet) south from the proposed P3 stack, south of W. 5th Street and west of Harbor Boulevard. The North Shore at Mandalay Bay is an approved residential development scheduled to commence construction in 2016, located on the east side of Harbor Boulevard, to the south and east of MGS and SCE's McGrath Peaker Plant.

The distance from the proposed P3 stack to the closest North Shore at Mandalay Bay development boundary is approximately 0.47 mile, or approximately 2,460 feet.

The existing MGS property, including the 3-acre P3 site, was graded during the development of the MGS in the 1950s, and is currently at approximately elevation 14 feet mean lower low water (MLLW) level. The top of the dunes to the west of the P3 site ranges from approximately elevation 20 to 30 feet MLLW. An artificial berm was

PROJECT DESCRIPTION - FIGURE 2
Puente Power Project - Project Location



CALIFORNIA ENERGY COMMISSION-SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: AFC Figure 2.4-1

constructed along the northern and eastern edges of the property in the early 1970s to protect the facility from flooding. The top of the engineered berm is at an elevation of approximately 20 feet MLLW. The current site topography is depicted in the attached Figure 3.

The site is underlain by eolian and alluvial deposits consisting predominantly of sand and silty sand with some interbedded sandy silt and clay. Soil groundwater levels near the site are influenced by tidal fluctuation, precipitation, irrigation, and groundwater pumping. During a recent geotechnical investigation, groundwater was detected at approximately 9 feet below ground surface (bgs) (AFC Volume II, Appendix A-9, pg. 11), and historically has been reported as high as 5 feet bgs. The portion of the MGS property where P3 will be located was originally slated for development of future steam-generating units (identified in previous plans as MGS Units 3 and 4); however, these were never constructed at this location, although an alternative MGS Unit 3 (discussed in **PROJECT COMPONENTS** below) was constructed on-site immediately south of Units 1 and 2.

A 30-inch-diameter gas line traverses the P3 site that was intended to be the fuel supply for the future steam-generating units. This line would be capped and either left in place, or removed if necessitated by P3 construction.

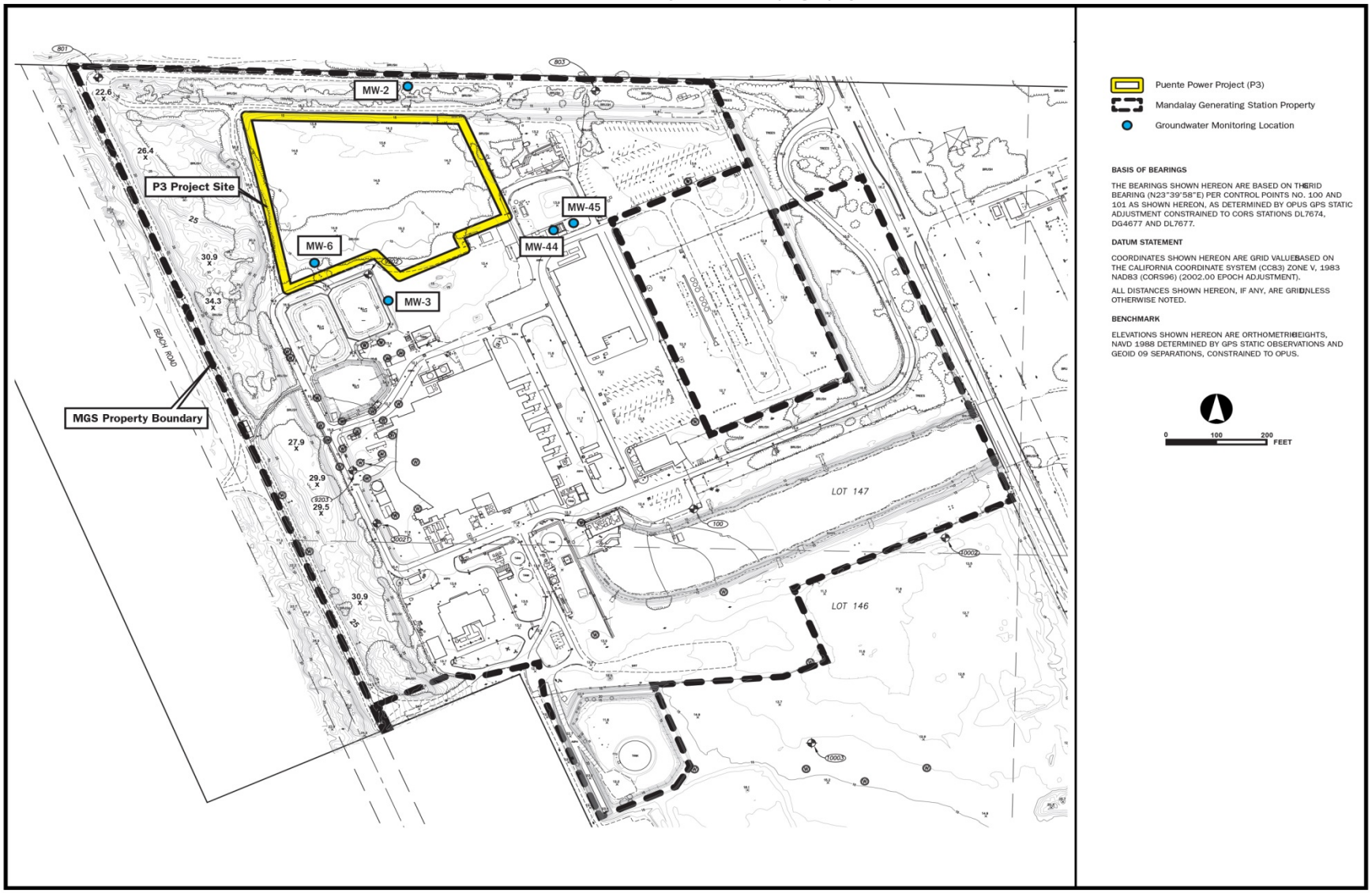
APPLICANT'S PROJECT PURPOSE AND OBJECTIVES

As described in the AFC, P3 would be owned and operated by NRG Energy Center Oxnard, LLC. The Executive Summary (section 1.0) of the AFC describes the applicant's objectives for the P3 proposal as follows:

- Fulfill NRG's obligations under its 20-year Resource Adequacy Purchase Agreement (RAPA) with SCE requiring development of a 262-MW nominal net output of newer, more flexible and efficient natural-gas generation at the site of the existing MGS;
- Provide an efficient, reliable, and predictable power supply by using a simple-cycle, natural-gas–fired combustion turbine to replace the existing once-through cooling (OTC) generation;
- Support the local capacity requirements of the California Independent System Operator (Cal ISO) Big Creek/Ventura Local Capacity Reliability (LCR) area;
- Develop a 262-MW nominal net power-generating 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;
- Be designed, permitted, built, and commissioned by June 1, 2020;

PROJECT DESCRIPTION - FIGURE 3

Puente Power Project - Site Topography



CALIFORNIA ENERGY COMMISSION-SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 2.4-2

- Minimize environmental impacts and development costs by developing on an existing brownfield site and reusing existing transmission, water, wastewater, and natural-gas infrastructure;
- Site the project on property that has an industrial land use designation with consistent zoning[1]; and
- Safely produce electricity without creating significant environmental impacts.

PROJECT COMPONENTS

Existing MGS

The existing MGS is a natural-gas–fired steam electric generating facility owned by NRG California South LP, consisting of two conventional steam turbine units (Units 1 and 2) and one gas combustion turbine unit (Unit 3). Existing site components are identified on the Plot Plan attached as Figure 4.

MGS Units 1 and 2 were constructed in the 1950s, and have a combined generating capacity of 430 MW. Cooling water for Units 1 and 2 is ocean water conveyed via the 2.5-mile-long Edison Canal from the Channel Islands Harbor (also referred to as the Mandalay Canal). The generating station intake is in the Edison Canal. At maximum capacity, MGS maintains a total pumping capacity rated at 254 million gallons per day. MGS discharges up to 255.3 million gallons per day of wastewater consisting of OTC water and other process wastewaters into the Pacific Ocean via a concrete-and-rock rock-lined structure at a point immediately offshore of the facility. MGS has a National Pollutant Discharge Elimination System (NPDES) permit for withdrawal and discharge from the Los Angeles Regional Water Quality Control Board (LARWQCB, 2001).

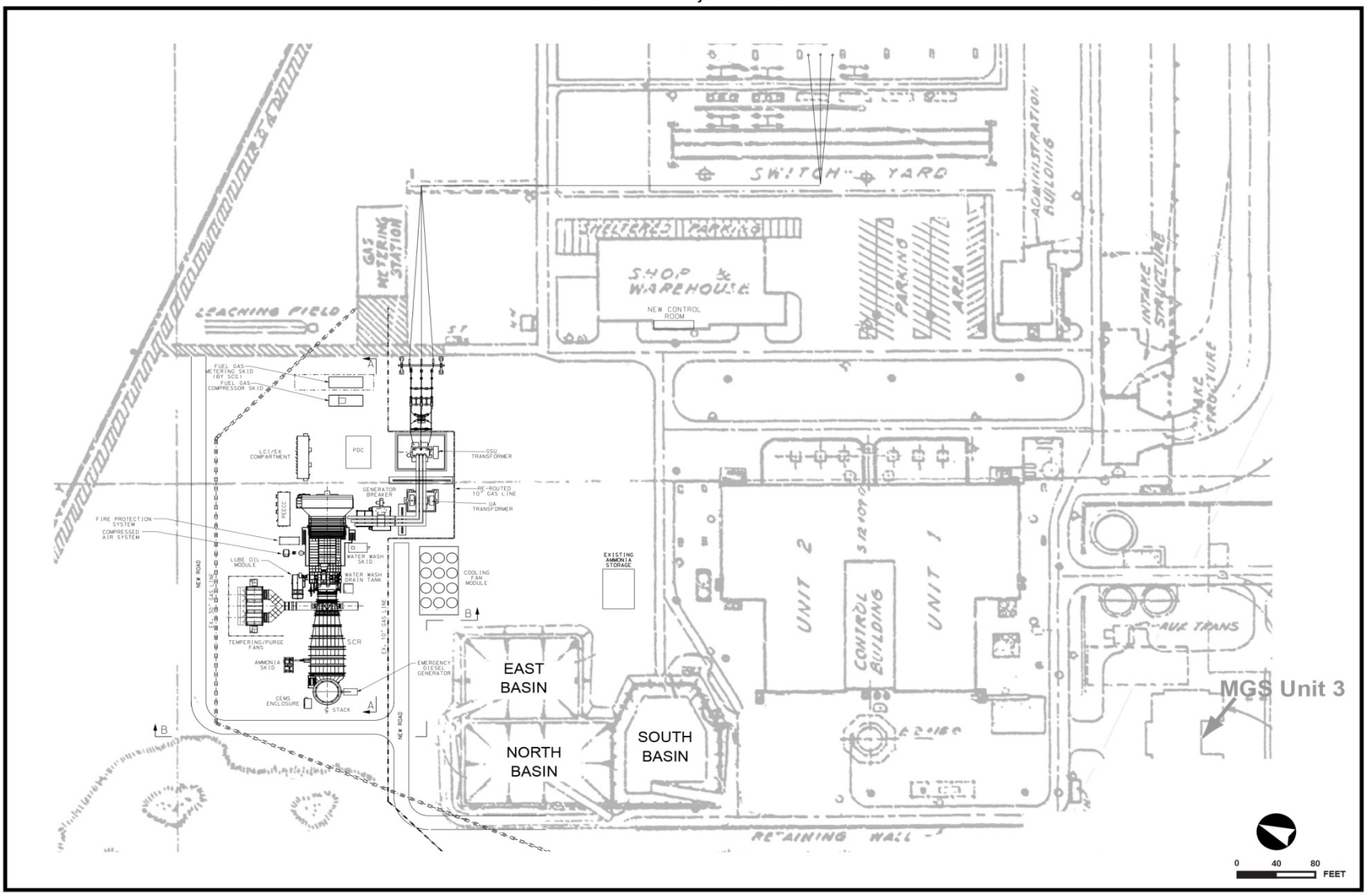
MGS Units 1 and 2 are subject to the California State Water Resources Control Board's Statewide Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling, also referred to as the Once-Through Cooling (or OTC) Policy. Irrespective of the proposed development of P3, pumping of ocean water for cooling MGS Units 1 and 2 must be reduced or eliminated as of the OTC Policy compliance date of December 31, 2020. If P3 is approved and developed, MGS Units 1 and 2 would be retired by the completion of commissioning of P3 and removed. A detailed description of demolition activities is provided below.

MGS Unit 3 is a jet-engine–powered unit that was commissioned in 1970, and has a generating capacity of approximately 130 MW. Unit 3 is connected to the neighboring SCE 66-kV switchyard, and provides local reliability. Unit 3 will continue to operate and will not be affected by P3 or the demolition of MGS Units 1 and 2.

[1] On June 7, 2016 the Oxnard City Council voted 5-0 to approve an Amendment to the City's Local General Plan to prohibit power generation facilities greater than 50 MW in areas subject to coastal hazards (which includes the MGS and P3 sites). Unless rescinded or otherwise reconsidered, the General Plan Amendment will become effective July 7, 2016. Staff will address any inconsistencies between the P3 and local land use plans arising from approval of the General Plan Amendment in the Final Staff Assessment.

PROJECT DESCRIPTION - FIGURE 4

Puente Power Project - Plot Plan



CALIFORNIA ENERGY COMMISSION-SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 2.7-1

MGS Facilities to be Decommissioned and Removed

If P3 is approved and developed, MGS Units 1 and 2 would be retired, decommissioned and demolished to existing grade after P3 is completed and commissioned. The decommissioning and demolition process and the potential environmental impacts are addressed in a supplement to the AFC titled "Project Enhancement and Refinement, Demolition of Mandalay Generating Station Units 1 and 2, docketed November 19, 2015 (TN #206698, referred to in this PSA as the Supplement).

Decommissioning Activities

Decommissioning will consist of the following activities:

- De-energize electrical equipment;
- Purge gases (e.g., natural gas, hydrogen) from equipment;
- Remove oil from all pumps, motors, pipes, oil reservoirs, transformers, and other equipment;
- Electrically isolate equipment;
- Physically isolate equipment by disconnecting from piping systems or other means;
- Operate and maintain equipment as required for environmental permit compliance (e.g., storm drainage system);
- Remove from service the backup diesel generator; and
- Verify that all facilities are left in a safe condition.

MGS Units 1 and 2 and certain existing ancillary facilities would be removed to accommodate development of P3, while other structures would be repurposed for future use in connection with P3. These activities, and any environmental impacts associated with them, are reasonably foreseeable consequences of P3, and will be described and analyzed in this PSA.

Demolition Activities

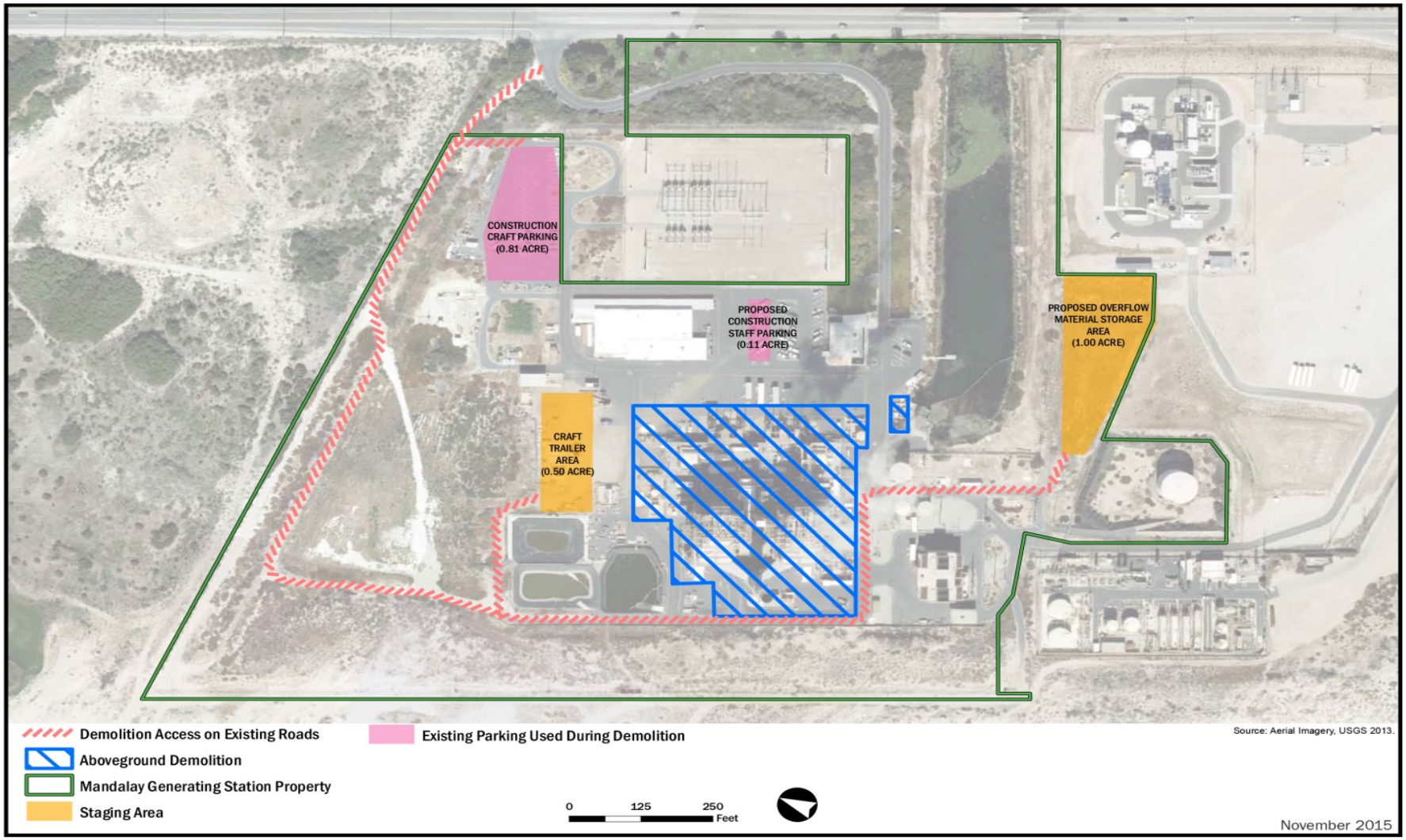
Applicant proposes to demolish all above-grade structures associated with MGS Units 1 and 2 following their retirement and decommissioning. The demolition of Units 1 and 2 would generally occur in the western portion of the MGS property, south of the three basins and north of the water storage tanks area. All construction laydown and parking areas would be within the existing MGS site, and are the same ones to be used during construction of P3 (see Figure 1 – Site Plan, and Figure 5 – Demolition Areas).

The specific sequencing of demolition activities would provide for coordinated removal of MGS Units 1 and 2 and continued operation and maintenance of P3 and MGS Unit 3. Decommissioning of Units 1 and 2 would commence upon retirement of both units (no later than December 31, 2020), and is anticipated to take approximately 6 months.

Asbestos abatement and above-grade demolition work for MGS Units 1 and 2 is anticipated to take approximately 15 months following completion of decommissioning, and would be completed by late 2022. A simulation depicting the completed P3 facility

PROJECT DESCRIPTION - FIGURE 5

Puente Power Project - Demolition Area



CALIFORNIA ENERGY COMMISSION-SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Supplement Figure 2-1

and site conditions after demolition of MGS Units 1 and 2 is contained in Figure 6 – Project Finished Conditions.

Demolition would proceed in a series of tasks associated with each of the following major parts of MGS Units 1 and 2:

- Asbestos removal;
- Demolition to grade of the Units 1 and 2 turbine plant equipment and building;
- Demolition to grade of the Units 1 and 2 boiler plant equipment and structures;
- Demolition to grade of the 200-foot-tall exhaust stack;
- Removal of empty hazardous-materials-contaminated equipment; and
- Removal of transformers and associated electrical equipment up to the SCE switchyard.

These tasks are described below.

- Asbestos Removal: Asbestos-containing materials (ACM) are prevalent throughout the MGS plant equipment and structures. Past surveys would be verified and a new survey conducted, if necessary, to identify the presence of ACM. Asbestos removal will take place in compliance with all federal, state, and local requirements, including those for personnel protection.
- Turbine plant equipment and buildings: MGS Units 1 and 2 steam turbine generators were constructed as outdoor units served by a concrete operating floor, under which are housed turbine cycle components. These structures would be demolished to an “at-grade” condition. Approximately 500 linear feet of abandoned 10-inch-diameter fuel oil pipeline south of MGS Unit 2 near the water storage tanks would be removed to make room for auxiliary equipment for P3. Existing stormwater sumps in the area would be maintained during and following demolition activities. Subgrade infrastructure that could present a safety risk if not filled would be filled with crushed concrete derived from demolition activities.
- Boiler plants equipment and structures: MGS Units 1 and 2 boilers were constructed as outdoor units. The structures and systems would be demolished to an “at-grade” condition, with the core steel structures felled by implosion using explosive charges placed per an engineered blast plan. Existing stormwater sumps in the area will be maintained during and following demolition activities. Subgrade infrastructure that could present a safety risk if not filled would be filled with crushed concrete derived from demolition activities.
- Exhaust stack: The 200-foot-tall stack shared by MGS Units 1 and 2 would be demolished to an “at-grade” condition, with the core structure felled by implosion using explosive charges placed per an engineered blast plan. Subgrade infrastructure that could present a safety risk if not filled would be filled with crushed concrete derived from demolition activities.
- Contaminated equipment: All chemicals, hazardous materials, and contaminated equipment associated exclusively with MGS Units 1 and 2 would be removed from site and disposed of in appropriate facilities as part of the decommissioning process.

PROJECT DESCRIPTION - FIGURE 6

Puente Power Project - Project Finished Conditions



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SOURCE: AFC Supplement Figure 1-1

- Transformers and associated equipment: Transformers and associated electrical equipment (such as isolated-phase buses, breakers, and transmission lines) will be removed up to an interface with the SCE switchyard.

Existing Equipment and Structures to be Reused or Repurposed for P3

The major MGS equipment and features to be re-purposed for the P3 are described below:

- The existing MGS service water storage tank and demineralized water/reverse osmosis (RO) equipment, storage tanks, and systems will be retained and used as the source for evaporative cooling water for P3's CTG. A new 3-inch-diameter water pipeline would be installed from P3 to the connection with the existing demineralized water storage tanks.
- The existing MGS firewater pumps and tank (lower portion of the Service Water Tank) would be retained, and used to service the new facility. The firewater loop would be extended to service the new plant. The power supply to these two electric fire pumps would be changed. One pump will be connected to the new P3 switchgear and backed up by a new emergency diesel generator. The other will be connected to MGS Unit 3 switchgear, which is fed from the SCE 66-kV system, and would become the emergency backup fire pump.
- The existing ammonia receiving and storage system and tanks would be retained and reused, but the ammonia changed from 29 percent to 19 percent aqueous ammonia concentration. The ammonia line will be extended as required to interconnect to P3's ammonia distribution system.
- A portion of the existing MGS warehouse would be reconfigured to add a control room for the new plant, including all required heating, ventilation, and air conditioning (HVAC) modifications.
- Two of the existing MGS retention basins (North Basin and South Basin) would be reused to retain stormwater from the P3 area and the rest of the MGS site, and store the wastewater generated from P3.
- The existing MGS administration building would continue to be used as the administration building for the new P3 facility and the existing MGS Unit 3. Upgrades are likely to include new wall and roof insulation, new windows, new low-flow plumbing fixtures, new electrical lighting, and new heating, ventilation, and air conditioning units.
- The existing MGS septic system would continue to be used.

New P3 Generation Facility

If approved, P3 would consist of a 262-MW (nominal net) electric generating facility operating in simple-cycle mode. The combustion-gas turbine would connect to an electric generator, which would interconnect to the existing SCE switchyard adjacent to the MGS site. P3 would interconnect to the Cal ISO's transmission grid, and power generated by the facility made available to serve energy needs throughout California,

and more specifically the capacity needs of the Moorpark sub-area of the Big Creek/ Ventura Local Reliability Area (LRA).

PROCESS DESCRIPTION

If approved, P3 will consist of one GE 7HA.01 natural-gas–fired combustion turbine generator (CTG). The actual output of the CTG will vary in response to ambient air temperature conditions and the use of evaporative coolers. Full load output of the unit under expected operating and ambient (temperature/relative humidity) conditions will range from approximately 241 net MW to a peak of 271 net MW. The overall annual availability, as measured by equivalent availability factor (EAF) of the unit, is expected to be approximately 94 to 98 percent.

The simple-cycle CTG would be equipped with an emissions control system to include selective catalytic reduction (SCR) and oxidation catalyst, an ammonia system, a continuous emission monitoring system (CEMS), and a 188-foot-tall exhaust stack.

MECHANICAL SYSTEM

Major mechanical equipment for P3 comprises three main systems – the combustion turbine generator, the cooling system for heat rejection, and noise control features.

ELECTRICAL SYSTEM

The bulk of the electric power produced by the facility will be transmitted to the grid. A small amount of electric power will be used on site to power auxiliaries such as pumps and fans, control systems, and general facility loads, including lighting, heating, and air conditioning. Some power will also be converted from alternating current (AC) to direct current (DC), which will be used as backup power for control systems and other uses.

Uninterruptible Power Supply System

The CTG will also have an essential service 120 volt AC, single-phase, 60 hertz uninterruptible power supply (UPS) to supply AC power to essential instrumentation, to critical equipment loads, and to unit protection and safety systems that require uninterruptible AC power.

Emergency Power System

The Emergency Power System would provide power via a diesel generator to plant auxiliaries that are required to shut down the plant in the unlikely event of a total loss of the normal AC system. The new diesel generator will be 500 kilowatts (kW), with Tier 4 certification (Caterpillar 500 kW, 625 kilovolts, C15 ATAAC or similar).

FUEL GAS SUPPLY AND USE

The project will be fueled with pipeline-quality natural gas delivered by SoCalGas. Gas supplies will be acquired from gas providers in supply regions accessible through the SoCalGas transmission system.

Nominal full-load fuel consumption will be approximately 2,500 million British Thermal Units (MMBtu) per hour, higher heating value (HHV).

Total annual fuel consumption will be 6,790,000 MMBtu (HHV), based on a 30 percent dispatch. Fuel consumed during start-ups and shutdowns is expected to be 78,000 MMBtu (HHV), based on a total of 200 annual start-up/shutdown events.

The natural gas will be delivered to the site, and be routed from the new gas metering station area to the gas compression enclosure, where it will pass through the compressor to reach the required operational pressure of approximately 500 pounds per square inch.The location of the proposed gas compressor enclosure is shown on Figure 4. The new gas line route is shown on Figure 7. The maximum depth of excavation for the gas line is approximately 4 feet.

WATER SUPPLY AND TREATMENT

The power plant's various water uses will include water for the CTG inlet air evaporative coolers, service water system users, and potable water. The simple-cycle combustion turbine will use dry low NOX burners; therefore, NOX injection water will not be necessary.

Water Source and Quality

P3 will use potable water from the city of Oxnard. The city already supplies potable water to MGS. Depending on availability, P3 stormwater may be reclaimed and stored in the existing service water tank, thereby displacing a corresponding amount of potable water usage.

P3 will use the existing MGS service water storage tank. This 445,000 gallon storage tank provides storage capacity for service water and fire water. Approximately 100,000 gallons of the 445,000-gallon service water storage tank will be reserved for firefighting water usage. The remaining 345,000 gallons of water storage will be available for process/utility service. This equates to approximately 91 hours of capacity at maximum demand. New service water and demineralized water supply lines will be extended to P3 from the existing MGS system. No additional pumps are required. Figure 8 shows the points of connection and routes of the extended water supply lines to P3. The new service water line and the new demineralized water line will each be approximately 1,450 feet long; these lines will be installed in the same trench and are both expected to be a 3 inch-diameter high-density polyethylene (HDPE) pipe. In addition, a new 2 inch-diameter, 630 foot-long domestic water line will be installed to connect to the existing MGS domestic water supply tie-in. The maximum depth of excavation for the pipeline installation is approximately 4 feet.

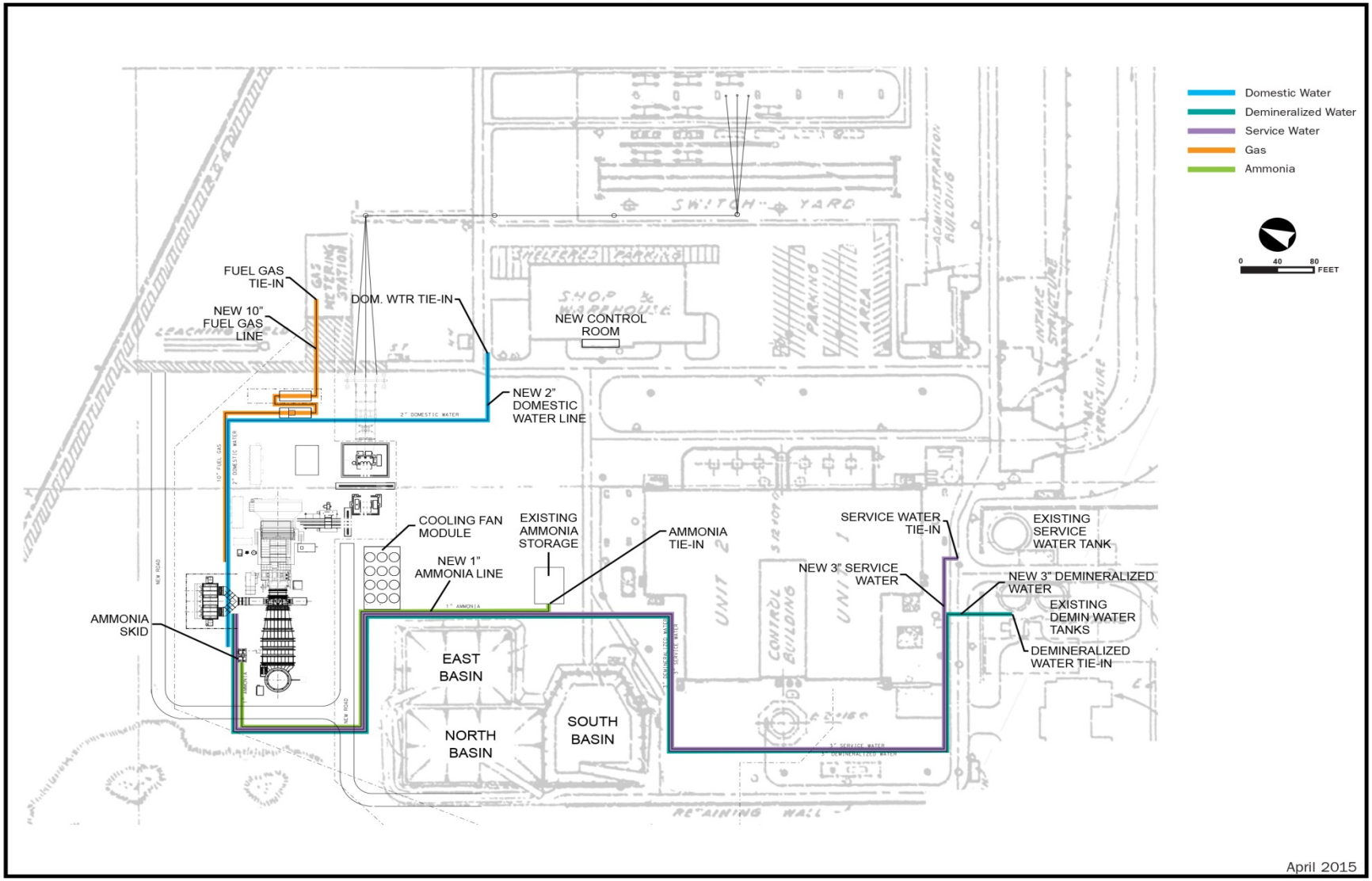
Water Treatment Requirements

Water treatment requirements for the project will vary depending on the specific use of the water. The following describes the main water treatment requirements:

- Demineralized water would be produced on site by a membrane-based production

PROJECT DESCRIPTION - FIGURE 7

Puente Power Project - Gas and Water Lines

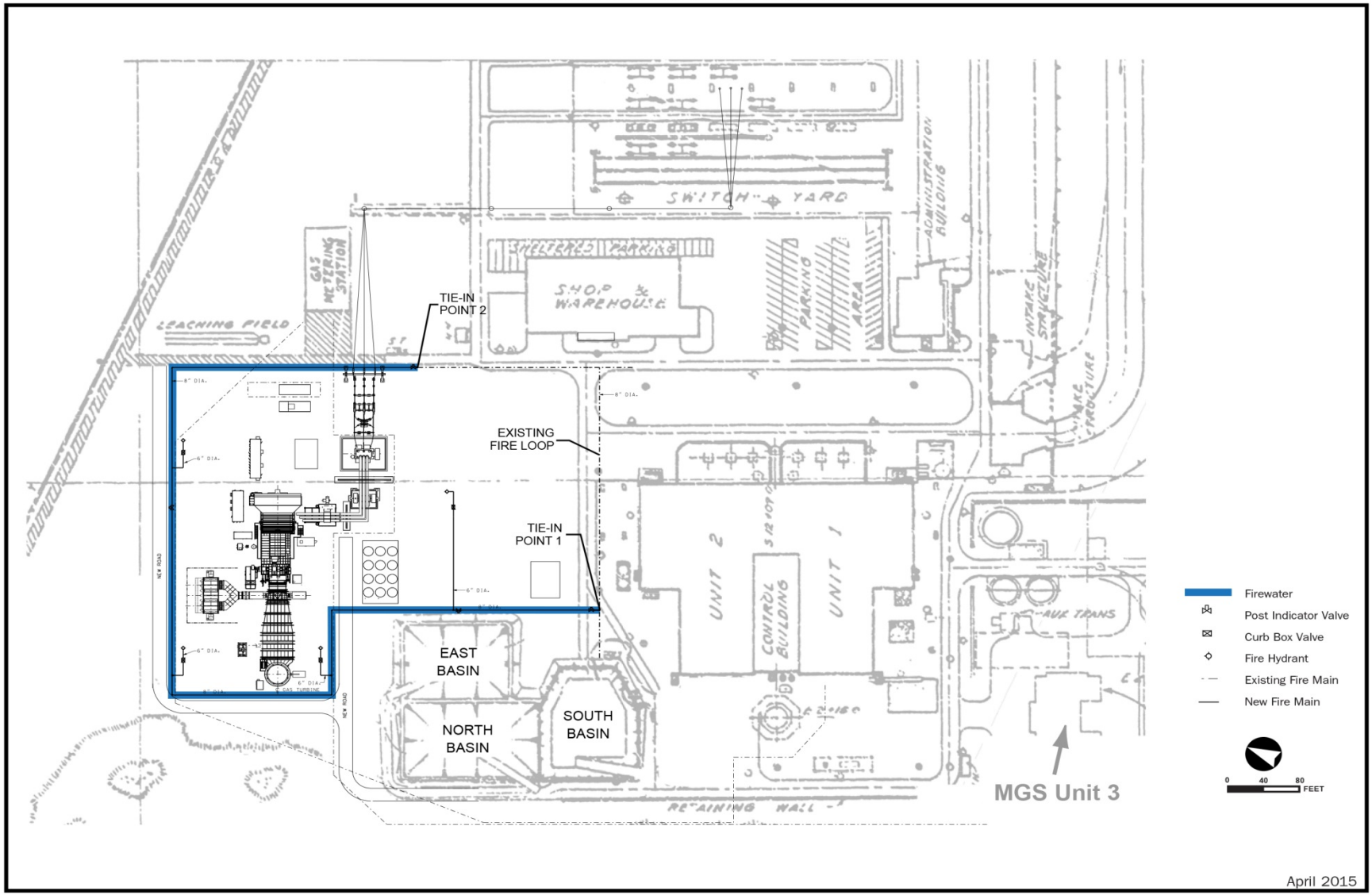


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SOURCE: AFC Figure 2.7-8

PROJECT DESCRIPTION - FIGURE 8

Puente Power Project - FireWater Loop



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SOURCE: AFC Figure 2.7-9

facility comprising a 2 pass RO system preceded by a softener.

- Demineralized water will be stored in the two demineralized water storage tanks. Each tank provides sufficient capacity for approximately 96 hours of peak-load operation coinciding with an outage of the water treatment system. The primary user of demineralized water is the evaporative cooler, which is used for power augmentation.

Consumptive Water Requirements

The simple-cycle P3 unit is expected to operate less than 30 percent of the time, during peak power demand periods. Therefore, total estimated annual water use at P3 is expected to be approximately 16 AFY.

The following sections describe P3's water uses.

- CTG Evaporative Coolers

Makeup water for the CTG evaporative coolers will be a 50/50 blend of demineralized and service water. The blowdown will be discharged to the existing MGS wastewater system. From there, it will be pumped to the existing North and South Basins, and discharged to the existing outfall. As required, water will be added to the evaporative cooler to replace the water that is lost to evaporation and blowdown.

- Potable Water

The facility will require potable water for personnel consumption, eyewash stations, showers, and sanitary needs. Potable water will tie into an existing potable water line on the MGS property, and no onsite treatment is required.

WASTE MANAGEMENT

This section describes the waste management processes leading to proper collection, treatment, and disposal of wastes. Wastes include process wastewater, solid nonhazardous waste, and hazardous waste. Additional information on waste management is provided in Section 4.14, Waste Management.

Wastewater

Plant process wastewater streams will be collected in the existing North and South Basins. The wastewater will be tested and discharged to the ocean in accordance with the MGS NPDES Permit No. CA0001180 discharge requirements.

Reject from the first pass reverse-osmosis unit would be discharged directly to the existing MGS basins, along with clear oil-water separator (OWS) effluent and evaporative cooler blowdown. Reject from the second pass RO will be recycled within the plant, and consequently will not generate wastewater.

The blowdown stream from the CTG evaporative cooler will be sent directly to the existing wastewater sump via the existing oily wastewater system.

An oil-water separator system (OWS) will be installed to collect wastewater from equipment washdowns, leakage, and miscellaneous plant drains. After passing through the OWS, water from the clear effluent chambers would be discharged to the existing wastewater sump, and ultimately routed to the existing MGS basins.

The existing domestic waste system collects discharge from sinks, toilets, and other sanitary facilities in the Administration building, which is discharged to the MGS' existing sanitary sewer collection system, which consists of septic tanks and leach field. The amount of domestic water used and sanitary wastewater generated is expected to be approximately the same as current operations, and no modifications to the existing septic system are anticipated.

Stormwater Runoff

Stormwater runoff from P3 will be directed via a new conveyance system to either the service water tank for reuse onsite, or to the existing North and South Basins. The combined basins maximum storage capacity, with no freeboard, will be approximately 2.5 AF. Up to an estimated 400,000 gallons per year of rain water (depending upon precipitation pattern) could be collected and used as service water and irrigation water to reduce the amount of potable water used by P3.

All equipment that has potential for leakage of oil or hazardous chemicals would be situated in spill containment areas. The oil from the oil containment chambers of the OWS would be collected and shipped off site for recycling.

Solid Nonhazardous Waste

The construction, operation, and maintenance of P3 will generate nonhazardous solid wastes typical of power generation facilities. Construction wastes generally include soil, scrap wood, excess concrete, empty containers, scrap metal, paper products, and insulation. Typical wastes generated during operation and maintenance include scrap metal and plastic, insulation material, paper, glass, empty containers, and other miscellaneous solid wastes. These materials are collected for recycling or transfer to landfills in accordance with applicable regulatory requirements.

Hazardous Waste

Hazardous wastes will be generated as a result of project construction, operation, and maintenance, as discussed in in the **WASTE MANAGEMENT** Section of this PSA.

Construction

Interface with existing equipment, as well as demolition/removal of an abandoned fuel oil pipe, will generate hazardous waste, including asbestos-containing material from equipment and pipeline insulation. The majority of hazardous waste generated during construction/demolition will be liquid wastes such as waste oil and other lubricants from machinery operations; solvents used for cleaning and materials preparation; waste paints; and other material coatings as well as residual fuel oil from the aforementioned demolition.

Operation

Hazardous wastes generated by P3 would include spent SCR and oxidation catalyst, used oil filters, used oil, and chemical cleaning wastes. Spent SCR and oxidation catalyst will be recycled by the catalyst supplier, if possible, or disposed in a Class I landfill. Used oil filters will be drained and disposed of in an offsite disposal facility. Used oil will be recovered and recycled by a waste-oil recycling contractor.

Chemical cleaning wastes would consist of acid and alkaline cleaning solutions and washwater used in periodic cleaning of the CTG. These wastes, which may have elevated concentrations of metals, will be tested and disposed of in accordance with applicable LORS.

HAZARDOUS MATERIALS MANAGEMENT

Construction

Hazardous materials used during construction of the project will be kept in a designated area in the proposed laydown areas shown on Figure 1. The area designated for construction office facilities will include areas designated for construction equipment fueling, maintenance, and parking. Appropriate measures will be provided, including approved dual-walled fuel tanks, fueling equipment, containment, supply of absorbent material, and disposal containers for waste lubricants. The Emergency Action Plan developed for the project will include a section that addresses accidental releases of hazardous materials.

Operation

A variety of hazardous reagents and materials would be stored and used at P3 in conjunction with operation and maintenance of the project. In general, the number of materials would be less than those currently used for the operation of MGS Units 1, 2, and 3, because there will no longer be a steam cycle as part of the generation facility. The type and character of other materials would be the same as or comparable to those used in the current operations. Hazardous materials that may be routinely stored in bulk and used in conjunction with the project include, but are not limited to, petroleum products, flammable and/or compressed gases, acids and caustics, aqueous ammonia, water treatment and cleaning chemicals, paints, and some solvents.

Curbs, berms, and concrete pits will be used where accidental release of hazardous chemicals may occur, constructed in accordance with the applicable LORS. Containment areas will be drained to appropriate collection sumps or neutralization tanks for recycling or offsite disposal. Piping and tanks exposed to potential traffic hazards will be protected by traffic barriers.

P3 would use existing hazardous materials storage and handling facilities on the MGS site, as described in the HMBP. Additional facilities specific to the new P3 would also be provided. All materials will be segregated and regulated independently.

FIRE PROTECTION

The project proposes to use the existing MGS firewater pumps and service water tank to service the new facility. The existing firewater loop would be expanded as shown on Figure 8. The system will include a multi-zone water-mist fire protection system for the CTG furnished by the CTG manufacturer (GE), fire hydrants, and portable fire extinguishers. The primary source of fire protection water will be water stored in the existing MGS Service Water Storage Tank. Approximately 100,000 gallons of water are reserved in the tank for fire water use.

CIVIL FEATURES

Roads and Fencing

The power plant site would be accessed by one of the existing MGS entrances on North Harbor Boulevard. Approximately 4 inches of gravel will be placed on the existing unpaved roads. Chain-link security fencing is already in place around the existing plant site.

Sanitary Wastewater System

Sanitary wastes will continue to be discharged to the MGS' existing septic system.

Site Drainage

The proposed grading and drainage plan is shown on Figure 9. The drainage areas and flows are based on the proposed grading and drainage scheme discussed in the previous **WASTE MANAGEMENT** section.

Earthwork and Foundation

Proposed earthwork on the power plant site will consist of excavation and compaction of earth to create the plant grade, and excavation for foundations and underground systems. Materials suitable for compaction will be stored in stockpiles at designated locations using proper erosion prevention methods. Any contaminated materials encountered during the excavation will be disposed of in accordance with applicable LORS.

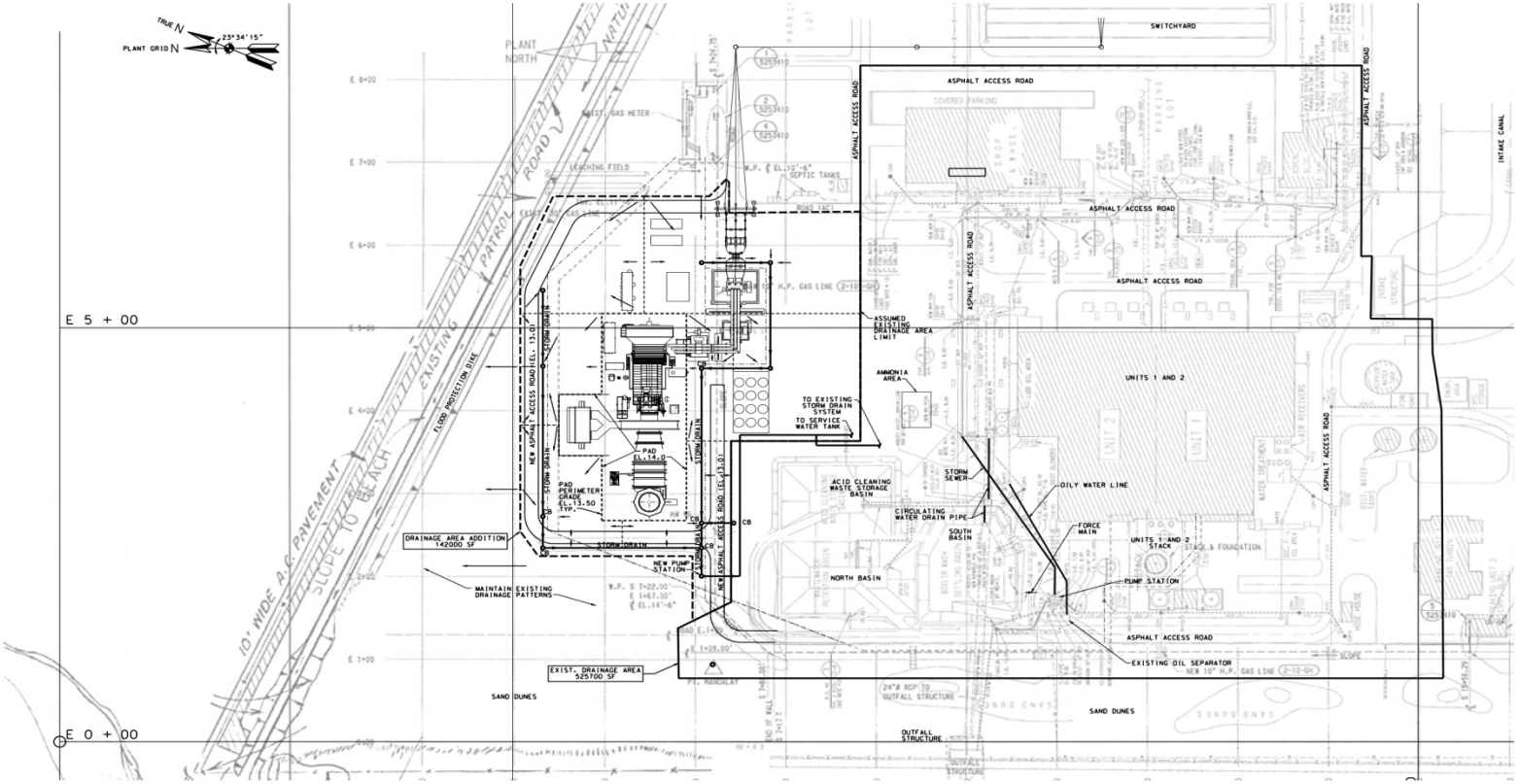
The project intends to reuse or recycle as much of the excess soil as appropriate. The excess soil will be characterized so that clean soils can be reused. Soil that cannot be reused will be transported to an appropriate landfill site. The maximum excavation depths in feet bgs for the following project components are:

- 7 feet bgs for P3 turbine block;
- 5 feet bgs for the reminder of P3 foundations;
- 5 feet bgs for transmission poles; and
- 4 feet bgs for all requisite piping.

In addition to these excavations, piles will be driven to support the foundation for the turbine block to a depth of 70 feet bgs. Because the existing soils are composed of

PROJECT DESCRIPTION - FIGURE 9

Puente Power Project - Site Grading and Drainage



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SOURCE: AFC Figure 2.8-1

sand, and because groundwater occurs at between 5 to 9 feet bgs, no predrilling for the pile installation is proposed. Instead, the piles will be driven to their maximum depth.

Project Construction

Site mobilization, grading, construction, and start-up/commissioning are estimated to take approximately 21 months. Decommissioning of Units 1 and 2 is expected to occur from June 2020 to August 2020. Demolition of MGS Units 1 and 2 is expected to occur from late 2021 through late 2022. The project construction schedule, construction staff, craft manpower, and average frequency of vehicle traffic are detailed in the sections below.

Power Generation Facility

Site mobilization of the project is expected to ensue following receipt of certification from the Energy Commission. The EPC contractor construction force would be expected to mobilize and begin onsite construction in October 2018. Construction and startup of P3 would be completed by June 2020. The schedule has been estimated based on a single-shift, 10 hour day and 50 hour week. The majority of construction operations are expected to take place between 7:00 a.m. and 6:00 p.m. However, longer workdays or work weeks may be necessary to make up schedule delays or complete critical construction activities, such as extended concrete pours for plant foundations, provided the limits of the local Noise Ordinance are not exceeded. During the start-up and testing phase of the project, some activities may continue 24 hours per day, 7 days per week. The onsite workforce is expected to reach its peak of 90 individuals in May 2019. Construction access to the site will be via North Harbor Boulevard.

Construction Plan

The project would be executed by an engineering, procurement and construction (EPC) contractor that would be responsible for the design, procurement, construction, and start-up of the facility. The EPC contractor would select subcontractors for certain specialty work as required. Site preparation work will include site grading and stormwater control. Crushed rock will be used for temporary roads, laydown, and work areas that are not currently paved.

Approximately 5.7 acres in the MGS will be used for construction laydown, offices, and parking. Approximately 0.9 acre of the 5.7 acres is currently paved. The remaining unpaved areas to be used for construction laydown and parking areas will be graded (as necessary), and surfaced with 4 inches of crushed rock.

At the end of construction, these areas will be cleaned up, but the crushed rock surfacing and fencing will remain in place. No additional restoration will be required at the end of construction.

Construction Materials and Equipment Delivery

Construction materials such as concrete, pipe, wire and cable, fuels, reinforcing steel, and small tools and consumables will be delivered to the P3 site by truck. The heavy equipment, such as the combustion turbine, GSU transformer and associated components will be transported by rail, and then trucked to the site.

Gas Pipeline Construction

The natural gas pipeline connection would be completed in time to support the construction interface in March 2019.

If required, the existing 10 inch and 30 inch underground gas lines serving MGS Unit 3, and Units 1 and 2, respectively, may need to be relocated prior to the start of construction. These two gas lines currently run through the proposed P3 site.

Construction Land Disturbance Control Measures

The EPC contractor would be responsible for implementing fugitive dust control measures during construction at the project site to minimize the formation of fugitive dust.

As discussed in the **AIR QUALITY** section of this PSA, required fugitive dust mitigation measures are expected to control more than 90 percent of the fugitive dust that occurs during onsite construction.

In addition, a construction storm water pollution prevention plan (SWPPP) incorporating construction best management practices (BMPs) will be prepared and implemented.

Site-Specific Health and Safety Plan

A site-specific health and safety plan (HSP) will be developed by the EPC contractor for its scope of work. The HSP will incorporate information and procedures to be followed by onsite personnel for the completion of the work.

The HSP will outline requirements and provide guidance for control of construction safety hazards in compliance with safety standards and protection of public health.

Demolition Plan – Site Fuel Lines

If the project is approved, demolition and removal of the abandoned fuel oil pipe will begin. The demolition and removal would occur between MGS Unit 2 and the former fuel oil tank. If required, the existing 10-inch and 30-inch underground gas lines serving MGS Unit 3, and Units 1 and 2, respectively, may need to be relocated prior to the start of construction. These two gas lines currently run through the proposed project site.

To reduce demolition impacts, BMPs will be employed. The BMPs include maintaining and using all concrete and asphalt pavement, sweeping and dampening pavements as necessary to prevent dust nuisances, watering for dust suppression, and covering all truck loads prior to exiting the demolition work zone area.

Project Operation

Plant operation will require approximately 17 full-time permanent personnel, with 12 employees working a day shift and 5 employees working a standard 8 hour day. The plant will be staffed 7 days a week, 24 hours a day. When the plant is not operating, personnel will be present as necessary for maintenance and to prepare the plant for start-up. P3 will use existing MGS staff. Power produced by P3 would be sold into the California wholesale power market to support local reliability and serve electric demand

in Southern California. Peak-load operation most likely will occur during summer peak hours, and minimum-load operation during off-peak hours. Shutdown periods for annual maintenance would be scheduled during extended periods of low demand, which typically occur in the autumn or spring.

The design of P3 provides for a wide range of operating flexibility; that is, an ability to start up quickly and operate efficiently across its dispatch range. Overall annual availability of the power plant is expected to be in the range of 94 to 98 percent.

Facility Closure

Facility closure can be temporary or permanent. See the **COMPLIANCE CONDITIONS** section of this PSA for a description of temporary, short-term, and long-term closure plans that would be required if the project is approved.

SCHEDULE

Construction of P3 is expected to occur over a 21-month period, and demolition of MGS Units 1 and 2 is expected to take an additional 18 months. Table 3-1 below outlines the basic phases of construction, decommissioning and demolition.

Table 3-1
Project Schedule by Phase

PROJECT PHASE	2018	2019	2020	2021	2022
P3 Construction - Site mobilization, minor demolition and site preparation, development of the CTG and SCR foundations and structures; March 30, 2018 through November 19, 2019					
P3 Start-Up - Start-up testing and commissioning; November 20, 2019 through June 1, 2020					
MGS Units 1 and 2 Decommissioning - De-energize electrical equipment, purge/remove all gasses and fluids from equipment, remove backup gnerator, isolate equipment and disconnect from piping and fuel systems; June 2020 through June 2021					
MGS Units 1 and 2 Demolition - Asbestos and HBM removal, Demolish MGS Units 1 and 2 turbine and bouler equipment/buildings and SCR; June 2021 through 2022					

REFERENCES

PPP 2015a – NRG Energy Center Oxnard LLC/John Chillemi (TN 204219-1 – 204220-14). Application for Certification, dated April 13, 2015. Submitted to Robert Oglesby/CEC/Docket Unit on April 16, 2015

PPP 2015x – Latham & Watkins LLP Project Enhancement and Refinement, Demolition of Mandalay Generating Station Units 1 and 2 (TN 206698). Submitted on November 19, 2015. CEC/Docket Unit on November 19, 2015.

PPP 2015ii – Revised Air Quality Emissions and Modeling Results for the Enhancement and Refinement Demolition of Mandalay Units 1 and 2 Latham & Watkins LLP. Submitted on December 16, 2015. CEC/Docket Unit on December 16, 2015.

AIR QUALITY

Jacquelyn Record

SUMMARY OF CONCLUSIONS

At the time of publication, the proposed Puente Power Project (P3) project has not been fully mitigated. Staff has identified the need for additional mitigation for particulate matter less than 10 microns (PM10) and sulfur dioxide (a precursor to PM10) emissions impacts. Staff is continuing the development of mitigation measures in the proposed Air Quality conditions of certification to include suitable mitigation to reduce the P3's direct and cumulative Air Quality impacts to a less than significant level. Staff proposes Condition of Certification **AQ-SC9** to provide this mitigation.

Air quality issues related to the project are addressed through staff's analysis, additional staff recommended conditions of certification, and in the Ventura County Air Pollution Control District's (VCAPCD) Preliminary Determination of Compliance (PDOC) for the project. The P3 applicant has identified specific emissions reduction credits (ERCs) they would use to mitigate the proposed project's air quality impacts for meeting the requirements of the VCAPCD District Rules and Regulations.

As part of this analysis, staff considered the environmental justice population, local farm workers, and recreational users. Staff has assessed both the potential for localized impacts and regional impacts for the project's construction and operation, including the proposed demolition of the Mandalay Generating Station (MGS). Staff has recommended mitigation and monitoring requirements that should be sufficient to reduce the adverse construction, demolition, and operating emission impacts to less than significant.

Global climate change and greenhouse gas (GHG) emissions from the project are discussed and analyzed in **Air Quality Appendix AIR-1**. P3 would replace less efficient existing facilities with a modern, flexible, dispatchable, lower emission of carbon dioxide per megawatt hour (CO_2/MWh) unit, which would emit approximately 0.508 metric tonnes of carbon dioxide per net megawatt hour (MTCO2/MWh). P3, as a peaker facility, would meet specific local need. P3 would be permitted for 2,150 hours of operation per year, but would be expected to operate at a lower fraction of those maximum permitted hours due to the fact that simple cycle generators are generally only dispatched when needed. The facility would emit over 25,000 metric tonnes of carbon dioxide equivalent (MTCO2E) emissions and therefore would be subject to mandatory state and federal GHG reporting requirements. The project, as a peaking project with an enforceable operating limitation less than 60 percent of capacity, is not subject to the requirements of Senate Bill 1368 (Perata, Chapter 598, Statutes of 2006), the State's Emission Performance Standard.

If built, P3 would be required to participate in California's greenhouse gas cap-and-trade program. This cap-and-trade program is part of a broad effort by the State of California to reduce GHG emissions as required by Assembly Bill 32 (Núñez, Chapter 488, Statutes of 2006) (AB 32), which is implemented by the California Air Resources Board (ARB). Market participants, such as P3, would be required to report their GHG

emissions and to obtain GHG emissions allowances (and offsets) for those reported emissions by purchasing allowances from the capped market and offsets from outside the AB 32 program. Thus, P3, as a GHG cap-and-trade participant, would be consistent with California's landmark AB 32 program, which is a statewide program coordinated with a region-wide Western Climate Initiative program to reduce California's GHG emissions to 1990 levels by 2020.

INTRODUCTION

This analysis evaluates the expected air quality impacts of the emissions due to the construction and operation of the proposed P3 by NRG, LLC (applicant). P3 would be located in Oxnard and developed within the existing boundaries of the NRG-owned Mandalay Generating Station (MGS). The project would be located on approximately 3 acres of previously disturbed vacant land in the northern portion of the existing MGS site adjacent to the Pacific Ocean.

The analysis in this section focuses on the impacts of the proposed project's criteria air pollutant emissions, while the climate change/greenhouse gases emissions impact analysis is provided in **Appendix AIR-1**, and the air toxics emissions health impacts are analyzed separately in the **Public Health** section. Criteria air pollutants are defined as those air contaminants for which the state and/or federal government has established an ambient air quality standard to protect public health. The criteria pollutants analyzed are nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO), ozone (O_3), respirable particulate matter (PM10), and fine particulate matter (PM2.5). In addition, volatile organic compound (VOC) also called reactive organic compound (ROC) emissions are analyzed because they are precursors to both O_3 and particulate matter. Because NO_2 and SO_2 readily react in the atmosphere to form other oxides of nitrogen and sulfur respectively, the terms nitrogen oxides (NOx) and sulfur oxides (SOx) are also used when discussing these two pollutants.

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

- Whether P3 is likely to conform with applicable federal, state and District air quality laws, ordinances, regulations and standards (LORS) (Title 20, California Code of Regulations, section 1742 (d));
- Whether P3 is likely to cause significant air quality impacts, including new violations of ambient air quality standards or contributions to existing violations of those standards (Title 20, California Code of Regulations, section 1744.5); and
- Whether the mitigation proposed for P3 is adequate to lessen the potential impacts to a level of insignificance (Title 20, California Code of Regulations, section 1742 (b)).

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The following federal, state, and local laws and policies shown below in **Air Quality Table 1** pertain to the control of criteria pollutant emissions and mitigation of air quality impacts. Staff's analysis examines the project's compliance with these requirements.

Air Quality Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable LORS	Description
Federal	
Title 40 CFR Part 51 (New Source Review) Title 40 CFR Part 52 (Prevention of Significant Deterioration Program)	Nonattainment New Source Review (NSR) requires a permit and requires Best Available Control Technology (BACT) and offsets. Prevention of Significant Deterioration (PSD) requires major sources or major modifications to major sources to obtain permits for attainment pollutants. P3 would be a modification of an existing major source, the Mandalay Generating Station, and thus the trigger levels are emissions increases of 40 tons per year of NOx or VOC or SOx, 15 tons per year of PM10, or 100 tons per year of CO. P3 is not expected to trigger a major modification under this rule.
Title 40 CFR 60, Subpart IIII	New Source Performance Standard for Stationary Compression Ignition Internal Combustion Engines. Establishes emission standards for compression ignition internal combustion engines, including emergency generators and fire water pump engines.
Title 40 CFR Part 60, Subpart KKKK (Standards of Performance for Stationary Combustion Turbines)	New Source Performance Standard for Stationary Combustion Turbines: 15 parts per million (ppm) NOx at 15 % O_2 and fuel sulfur limit of 0.060 lb SOx per million Btu heat input. BACT would be more restrictive.
Title 40 CFR Part 60, Subpart TTTT (Standards of Performance for Greenhouse Gas Emissions for Electrical Generating Units)	This rule establishes, effective October 23, 2015, standards for emissions for carbon dioxide (CO_2) for newly constructed, modified, and reconstructed affected fossil fuel-fired electricity utility generating units (EGUs).
Title 40 CFR Part 63 Subpart YYYY (National Emission Standards for Hazardous Air Pollutants [NESHAPs] for Combustion turbines)	Establishes national emission standards to limit emissions of hazardous air pollutants (HAPs) from facilities in specific categories. Projects would be subject to the Title 40 CFR, Part 63 requirements if the HAP Potential to Emit (PTE) is greater or equal to 25 tons per year (tpy) for total HAPs or 10 tpy for individual HAPs. 40 CFR Part 63 Subpart YYYY requires combustion turbines to comply with a formaldehyde emission limit of 91 parts per billion by volume dry basis (ppbvd) measured at 15 percent O2. In addition, 40 CFR Part 63 Subpart YYYY requires an operating limitation such that the operator of the equipment maintains the 4-hour rolling average of the catalyst inlet temperature within the range suggested by the catalyst manufacturer.
Title 40 CFR Part 64 (Compliance Assurance Monitoring [CAM])	The CAM regulation applies to major stationary sources, which use control equipment to achieve a specified emission limit. The rule is intended to provide “reasonable assurance” that the control systems are operating properly to maintain compliance with the emission limits. This subpart rule applies to new turbines because the NOx and CO emissions are subject to Best Available Control Technology (BACT) limits and are achieved with added equipment, i.e., selective catalytic reduction (SCR) and an oxidation catalyst.
40 CFR Part 70	Title V: Federal permit. Title V permit application is required within one year of start of operation. See **Rule 33**.
40 CFR Part 72	Acid Rain Program. Requires permit and obtaining sulfur oxides credits. See **Rule 34**.
State	
Health and Safety Code (HSC) section 40910-40930	Permitting of source needs to be consistent with Air Resource Board (ARB) approved Clean Air Plans.

Applicable LORS	Description
HSC section 41700 (Nuisance Regulation)	Restricts emissions that would cause nuisance or injury.
California Public Resources Code §25523(a); 2300-2309:CEC & ARB Memorandum of Understanding	Requires that an Energy Commission Decision on an AFC to assure protection of environmental quality.
Title 13 California Code of Regulations, §2449	In-Use Off-road Diesel Vehicle Regulation. Imposes idling limits of five minutes, requires a plan for emissions reductions for medium to large fleets, requires all vehicles with engines greater than 25 horsepower (HP) to be reported to the California Air Resources Board (ARB) and labeled, and restricts adding older vehicles into fleets.
Title 13, California Code of Regulations, §2485	Prohibits idling longer than five minutes for diesel fueled commercial motor vehicles.
Title 17, California Code of Regulations, §93115 (Airborne Toxic Control Measure for Stationary Compression Ignition Engines)	Limits types of fuels allowed, establishes maximum emission rates and establishes recordkeeping requirements for stationary compression ignition engines, including diesel-fueled emergency generator and fire water pump engines.
Local – Ventura County Air Pollution Control District (VCAPCD) Rule and Regulations	
Regulation II – Permits, Operating and Construction, New Source Review	This regulation sets forth the regulatory framework of the application for, and issuance of, construction and operation permits for new, altered, and existing equipment. Included in these requirements are the federally delegated requirements for New Source Review, Title V Permits, and the Acid Rain Program. Regulation II, Rule 26, establish the review requirements for new, replacements, modified or relocated facilities, in conformance with the federal New Source Review regulation to ensure that these facilities do not interfere with progress in attainment of the national ambient air quality standards and that future economic growth in Ventura County is not unnecessarily restricted. This regulation establishes Best Available Control Technology (BACT) and emission offset requirements. **Rule 10** – Specifies permitting requirements. **Rule 26.9** – Establishes a procedure for coordinating VCAPCD review of power plant projects with the Energy Commission process. **Rules 26.1** through **26.12** – Implements new source review programs as well as the new source review requirements of the California CAA. **Rule 26.13** – Adopts the federal PSD program. **Rule 33.1** through **33.10** – Implements the Title V federal operating permit. **Rule 34** – Acid Deposit Control

Applicable LORS	Description
Regulation IV – Prohibitions, General and Source Specific Regulations	**Rules 50** to **Rule 57.1** - This regulation sets forth the restrictions for visible emissions, odor nuisance, fugitive dust, various air emissions, and fuel contaminants. This regulation also specifies additional performance standards for stationary combustion turbines and other internal combustion engines. **Rule 50** – Limits visible emission to no darker than Ringelmann No. 1 for periods greater than 3 minutes in any hour. **Rule 51** – Prohibits emissions in qualities that adversely affect public health, other business, or property. **Rule 54** – Limits sulfur emissions on site and off site. **Rule 55** – Limits visible dust emissions from construction activities. **Rule 57.1** – Limits PM emissions from stationary sources. **Rule 64** – Limits the sulfur content of fuels combusted in stationary sources. **Rule 72** – Adopts the federal standards of National Standards of Performance (NSPS) for New Stationary Sources. **Rule 73** – Requires units to comply with federal NESHAP standards. **Rule 74.9** – Limits CO, NOx, and ROC emissions from stationary reciprocating engines greater than or equal to 50 bhp. **Rule 74.23** – Limits NOx emissions from stationary combustion turbines.
Regulation VI – Source Testing and Stack Monitoring	**Rule 101** – Requires sampling and testing at facilities required to comply with this rule. **Rule 102** – Requires source tests necessary to verify compliance with emission limits. **Rule 103** – Requires project owner to maintain in good working order, and operate a Continuous Monitoring System in accordance with this provision.

SETTING

METEOROLOGICAL CONDITIONS

Ventura County has a Mediterranean climate, typical of most coastal California cities and is known to experience Santa Ana winds off the Transverse Ranges on occasion, which can increase temperatures. The area is controlled by a subtropical high-pressure system that is located off the Pacific coast. In the summer, this strong high-pressure system results in clear skies, high temperatures, and low humidity. Very little precipitation occurs during the summer months of June through August because storms are blocked by the high-pressure system. Beginning in the fall and continuing through the winter, the high pressure weakens and moves south, allowing storm systems to move through the area. Temperature, winds, and rainfall are more variable during these months, and stagnant conditions occur more frequently than during summer months. Weather patterns include periods of stormy weather with rain and gusty winds, clear weather that can occur after a storm, or persistent marine layer conditions, with or without ground fog, that can occur during extended parts of the year. The city of Ventura receives an average of 17.5 inches of rain annually (WC 2015).

Temperature, wind speed, and wind direction data collected at the Oxnard Airport monitoring station, about 2.1 miles east of the project site, were processed and a

eleven-year data set (1998-2008) was provided with the Application for Certification (AFC) air dispersion modeling files (PPP 2015a), and the Revised Air Quality Modeling Files (CEC 2015jj). These data were used in this analysis. The specific location of this meteorological station is approximately two miles from the surf zone, and should represent the local weather patterns, including persistent marine layer and fog conditions, nearly identical to the project site. The most predominant annual wind direction from this monitoring site is onshore from the west-northwest with a strong secondary northeast to east-northeast offshore component. Onshore winds are the most predominant during both the second and third quarters. The winds during the first and fourth quarters have a more predominate offshore component. In all cases, annual and quarterly, the wind direction frequencies outside the previously stated predominate onshore and offshore directions are fairly low. The average wind speed is 3.2 meters per second and dead calm hours occur infrequently, about 2.7 percent of the time. The wind speeds are generally higher during daylight hours, and are highest during the first and second quarters of the year.

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

EXISTING AIR QUALITY

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

The U.S. Environmental Protection Agency (U.S. EPA) and the ARB classify an area as attainment, unclassified, or nonattainment, depending on whether or not the monitored ambient air quality data show compliance, insufficient data is available, or non-compliance with the ambient air quality standards, respectively. The P3 project site is located within the South Central Coast Air Basin (SCCAB). This area is designated as nonattainment for both the federal and state ozone standards and the state PM10 and PM2.5 standards. **Air Quality Table 3** summarizes federal and state attainment status of criteria pollutants for the SCCAB.

Air Quality Table 2
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Standard	California Standard
Ozone (O_3)	8 Hour	0.070 ppm (147 µg/m^3) [a]	0.070 ppm (137 µg/m^3)
	1 Hour	—	0.09 ppm (180 µg/m^3)
Carbon Monoxide (CO)	8 Hour	9 ppm (10 mg/m^3)	9.0 ppm (10 mg/m^3)
	1 Hour	35 ppm (40 mg/m^3)	20 ppm (23 mg/m^3)
Nitrogen Dioxide (NO_2)	Annual	0.053 ppm (100 µg/m^3)	0.03 ppm (57 µg/m^3)
	1 Hour	100 ppb (188 µg/m^3) [b]	0.18 ppm (339 µg/m^3)
Sulfur Dioxide (SO_2)	24 Hour	—	0.04 ppm (105 µg/m^3)
	1 Hour	75 ppb (196 µg/m^3) [c]	0.25 ppm (655 µg/m^3)
Respirable Particulate Matter (PM10)	Annual	—	20 µg/m^3
	24 Hour	150 µg/m^3	50 µg/m^3
Fine Particulate Matter (PM2.5)	Annual	12.0 µg/m^3 [d]	12 µg/m^3
	24 Hour	35 µg/m^3	—
Sulfates (SO_4)	24 Hour	—	25 µg/m^3
Lead	30 Day Average	—	1.5 µg/m^3
	ing 3-Month Average	0.15 µg/m^3	—
Hydrogen Sulfide (H_2S)	1 Hour	—	0.03 ppm (42 µg/m^3)
Vinyl Chloride (chloroethene)	24 Hour	—	0.01 ppm (26 µg/m^3)
Visibility Reducing Particulates	8 Hour	—	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.

Source: ARB 2015a.
Notes:
a - Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O_3 standards additionally remain in effect in some areas. Revocation of the previous (2008) O_3 standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.
b - This one-hour federal standard is based on the 98th percentile of maximum daily peak hourly values, unlike the state one-hour standard that is not to be exceeded standard.
c - This one-hour federal standard is based on the 99th percentile of maximum daily peak hourly values, unlike the state one-hour standard that is a not be exceeded standard.
d - There is also a secondary standard of 15 µg/m^3.

Air Quality Table 3
Federal and State Attainment Status for the South Central Coast Air Basin [a]

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

Source: ARB 2015b, U.S. EPA 2015a, U.S. EPA 2015b, PDOC 2016
Note: a – The term Attainment is used for all designations, such as unclassifiable, that are functionally the same as an Attainment designation.

The operating monitoring stations closest to the proposed project site with long-term records for ozone, PM10, PM2.5 and NOx are the Oxnard Monitoring Station, which is located at Rio Mesa High School, seven miles northeast of the project site. For CO, the Goleta – Fairview monitoring station, located 36 miles northeast of the project site is used. For Sox, the UC Santa Barbara monitoring station, which is located around 40 miles northwest of the project site is used. The coastal locations of the Oxnard, Goleta and Santa Barbara County monitoring stations make them representative of conditions in Oxnard than other monitoring stations nearby.

Ozone

In the presence of ultraviolet radiation, both nitrogen oxides (NOx) and volatile organic compounds (VOC) go through a number of complex chemical reactions to form ozone. **Air Quality Table 4** summarizes the most project representative ambient ozone data collected from the Oxnard –Rio Mesa School monitoring station. The table includes the maximum one-hour and eight-hour ozone and the number of days above the California ambient air quality standards (CAAQS). Ozone formation is higher in spring, summer, and early fall and lower in the winter. The SCCAB was classified as an attainment area for the previous federal one-hour ozone standard (no longer applicable) and is now classified as a marginal nonattainment area for the federal eight-hour ozone standard. The SCCAB is also classified as a nonattainment area for the state ozone standards.

The yearly trends from 1990 to 2014 for the maximum one-hour and eight-hour ozone concentrations, referenced to the most stringent standard, and the number of days exceeding the California one-hour and eight-hour standards for the Oxnard –Rio Mesa School (1990-2014) monitoring station are shown in **Air Quality Figure 1** and **Figure 2**, respectively. On the first figure, the normalized concentration of 1.00 indicates the standard is not exceeded.

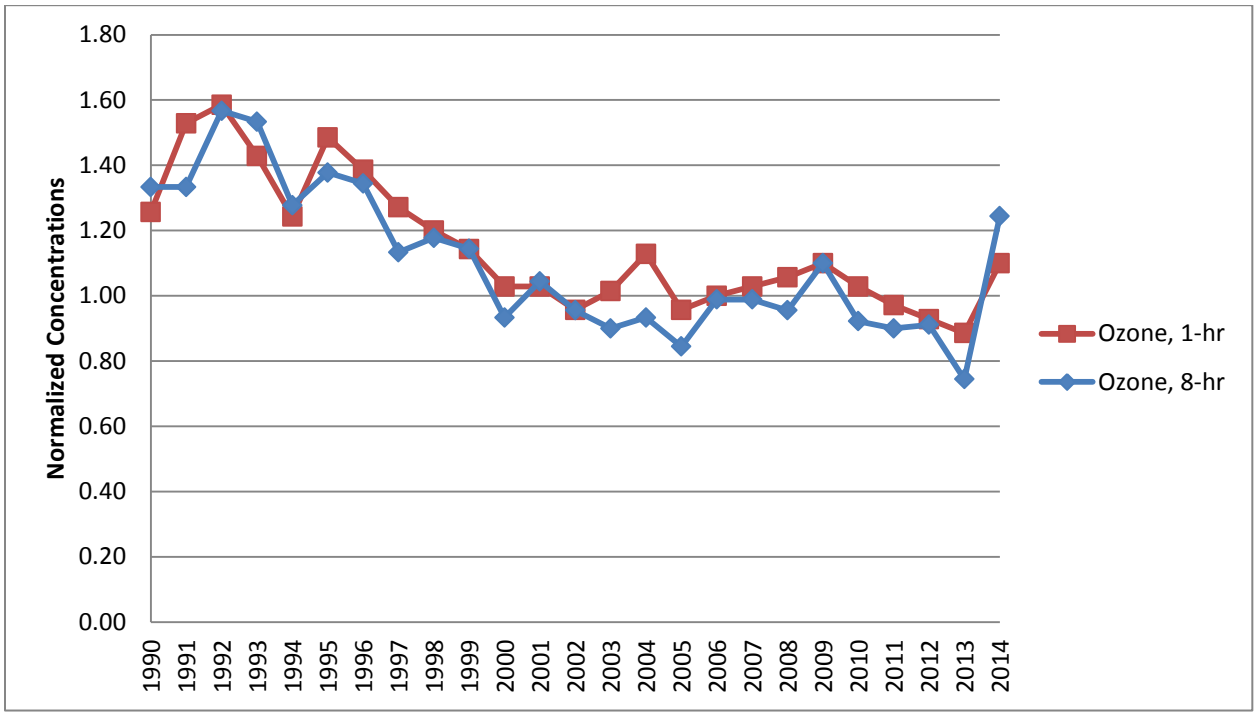
Air Quality Table 4
Ozone Air Quality Summary, 1991-2014 (ppm)

Year	Days Above CAAQS 1-Hr	Month of Max. 1-Hr Avg.	Max. 1-Hr Avg. (ppm)	Days Above CAAQS 8-Hr	Month of Max. 8-Hr Avg.	Max. 8-Hr Avg. (ppm)
Oxnard – Rio Mesa School						
1990	9	SEP	0.012	9	SEP	0.088
1991	12	SEP	0.120	42	SEP	0.107
1992	17	APR	0.141	26	APR	0.111
1993	8	MAY	0.138	22	MAY	0.100
1994	7	JUN	0.115	13	AUG	0.087
1995	7	OCT	0.124	16	OCT	0.104
1996	8	MAY	0.121	24	APR	0.097
1997	2	MAR	0.102	6	MAR	0.089
1998	1	JUL	0.106	7	JUL	0.084
1999	1	OCT	0.103	1	OCT	0.080
2000	0	JUN	0.084	1	JUN	0.072
2001	0	OCT	0.094	2	OCT	0.072
2002	0	JUL	0.086	0	JUN	0.067
2003	0	OCT	0.081	3	MAY	0.071
2004	0	SEP	0.084	1	SEP	0.079
2005	0	MAY	0.076	0	MAY	0.067
2006	0	SEP	0.089	0	SEP	0.070
2007	0	SEP	0.089	1	SEP	0.072
2008	0	JUN	0.086	1	JUN	0.074
2009	1	AUG	0.099	1	AUG	0.077
2011	0	OCT	0.081	0	OCT	0.068
2012	0	OCT	0.082	0	OCT	0.065
2013	0	MAY	0.067	0	MAY	0.062
2014	1	OCT	0.112	2	OCT	0.077

California Ambient Air Quality Standard (CAAQS): One-Hr, 0.09 ppm, 8-Hr, 0.070 ppm
National Ambient Air Quality Standard (NAAQS): Eight-Hr, 0.070 ppm, days above standard based on old standard of 0.080 ppm through 2007.
Source: ARB 2008 and ARB 2014c.

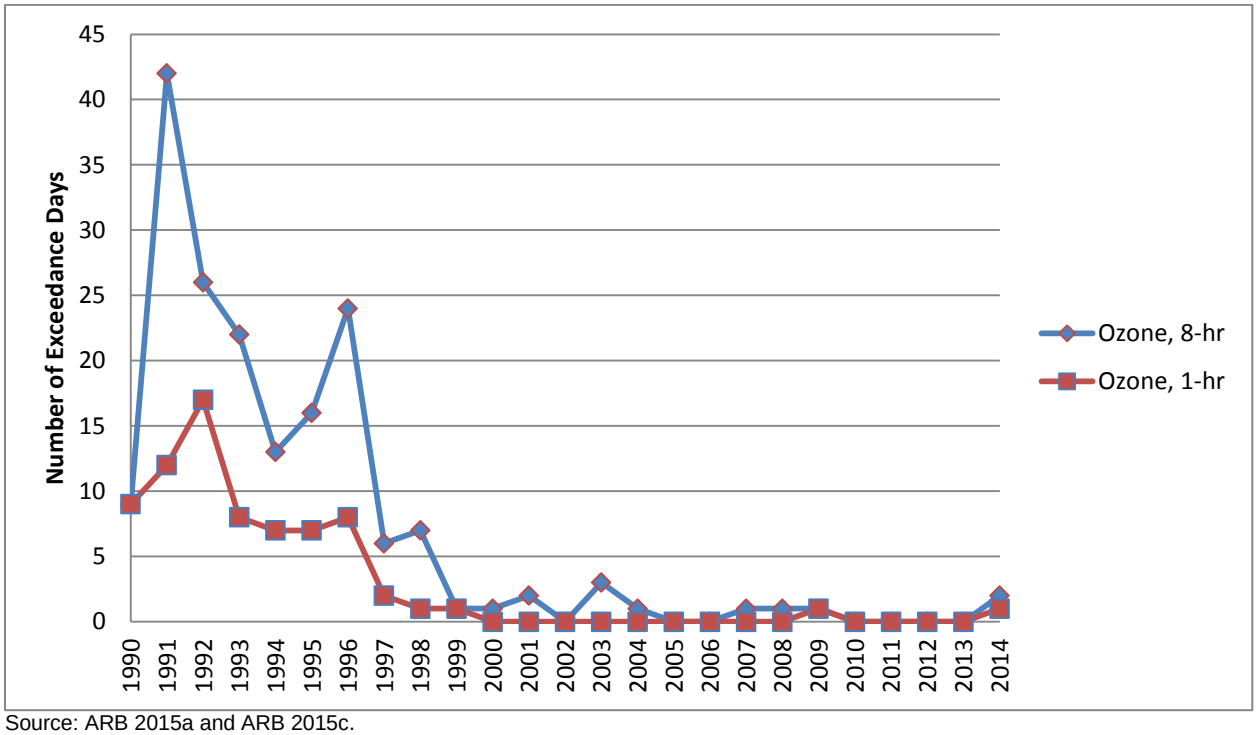
As these two figures show, the one-hour and eight-hour ozone concentrations were highest in early 1990's and the number of exceedances was highest in 1992. Maximum concentrations and the number of AAQS exceedances have declined significantly since 1990. The air basin cannot be redesignated as attainment of the federal and state ozone concentration standards until all monitoring stations within the air basin show no official exceedances of these standards for three consecutive years. Federal redesignation requires an official request for redesignation and the approval of an attainment or a maintenance plan.

Air Quality Figure 1
Normalized Ozone Air Quality Maximum Concentrations



Source: ARB 2015a

Air Quality Figure 2
Ozone – Number of Days Exceeding the Air Quality Standards



Source: ARB 2015a and ARB 2015c.

Respirable Particulate Matter (PM10)

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

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

As **Air Quality Table 5** indicates, the representative monitoring stations annually experience occasional violations of the state 24-hour PM10 standard (days above daily CAAQS) and continue to exceed the state annual PM10 standard of 20 µg/m^3. The SCCAB is classified as an attainment area for the federal PM10 standard and as a nonattainment area for the state PM10 standards.

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

The 1990 to 2014 yearly trends for the maximum 24-hour PM10 and Annual Arithmetic Mean PM10, referenced to the most stringent standard, and the number of days exceeding the California 24-hour PM10 standard for the Oxnard – Rio Mesa School (1990-2014) monitoring station are shown in **Air Quality Figure 4** and **Figure 5**, respectively.

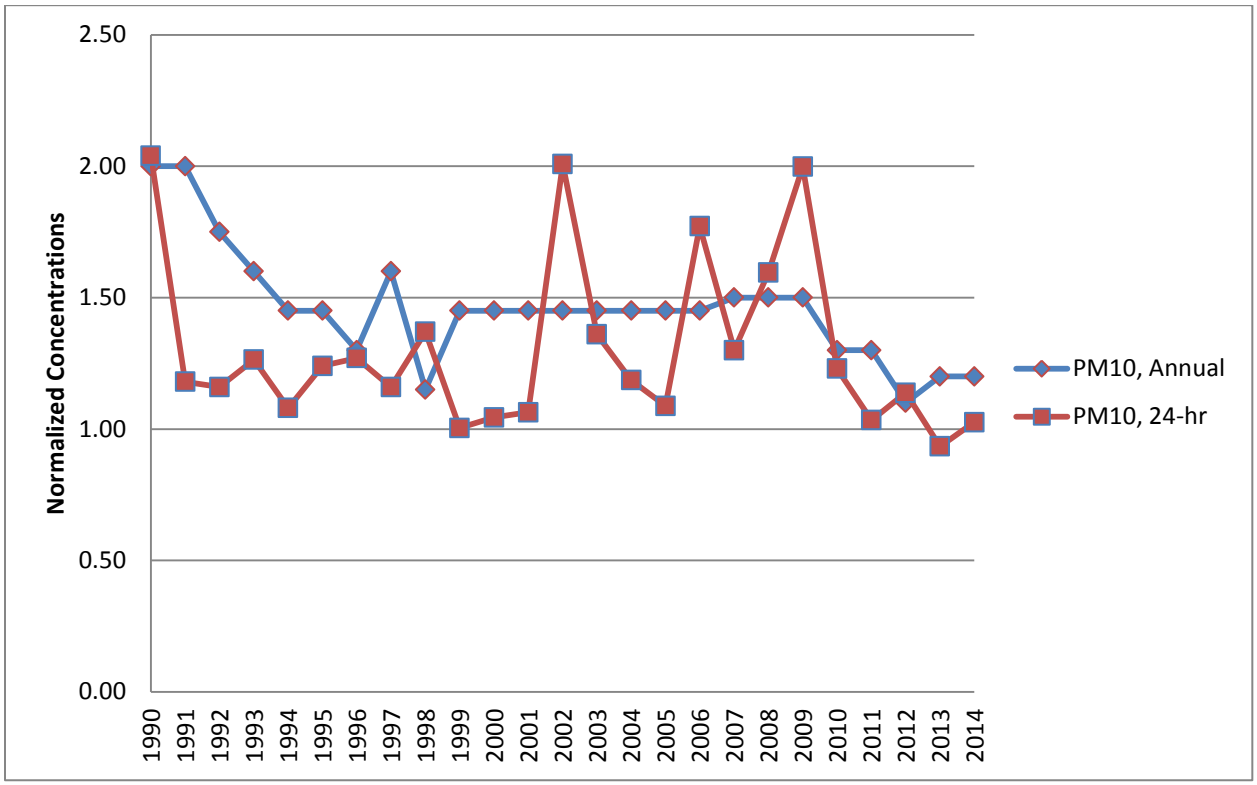
As the two figures show, there is an overall gradual downward trend for annual PM10 concentrations and the number of violations of the California 24-hour standard since 1990; however, there has been little progress in the 24-hour PM10 concentrations since 1998.

Air Quality Table 5
PM10 Air Quality Summary, 1990-2014 (µg/m^3)

Year	Days * Above Daily CAAQS	Month of Max. Daily Avg.	Max. Daily Avg.	Annual Arithmetic Mean (µg/m^3)
Oxnard – Rio Mesa School				
1990	10	OCT	102	34.9
1991	4	JAN	59	32.3
1992	5	OCT	58	29
1993	4	OCT	63	29
1994	2	OCT	54	--
1995	3	NOV	62	25.9
1996	1	AUG	64	25.3
1998	2	OCT	69	23.3
1999	0	OCT	50	28.5
2000	1	AUG	52	27.6
2001	3	OCT	53	28.8
2002	2	AUG	100	28.5
2003	5	NOV	68[a]	--
2004	1	APR	59	28.8
2005	2	JUL	54	25.5
2006	4	SEP	89	27.8
2007	2	SEP	65[a]	29.7
2008	3	JUL	80	26.2
2009	2	OCT	100	25.6
2010	1	MAR	62	21.7
2011	1	AUG	52	22.2
2012	1	AUG	57	21
2013	0	JUN	47	24.3
2014	2	MAR	51	--

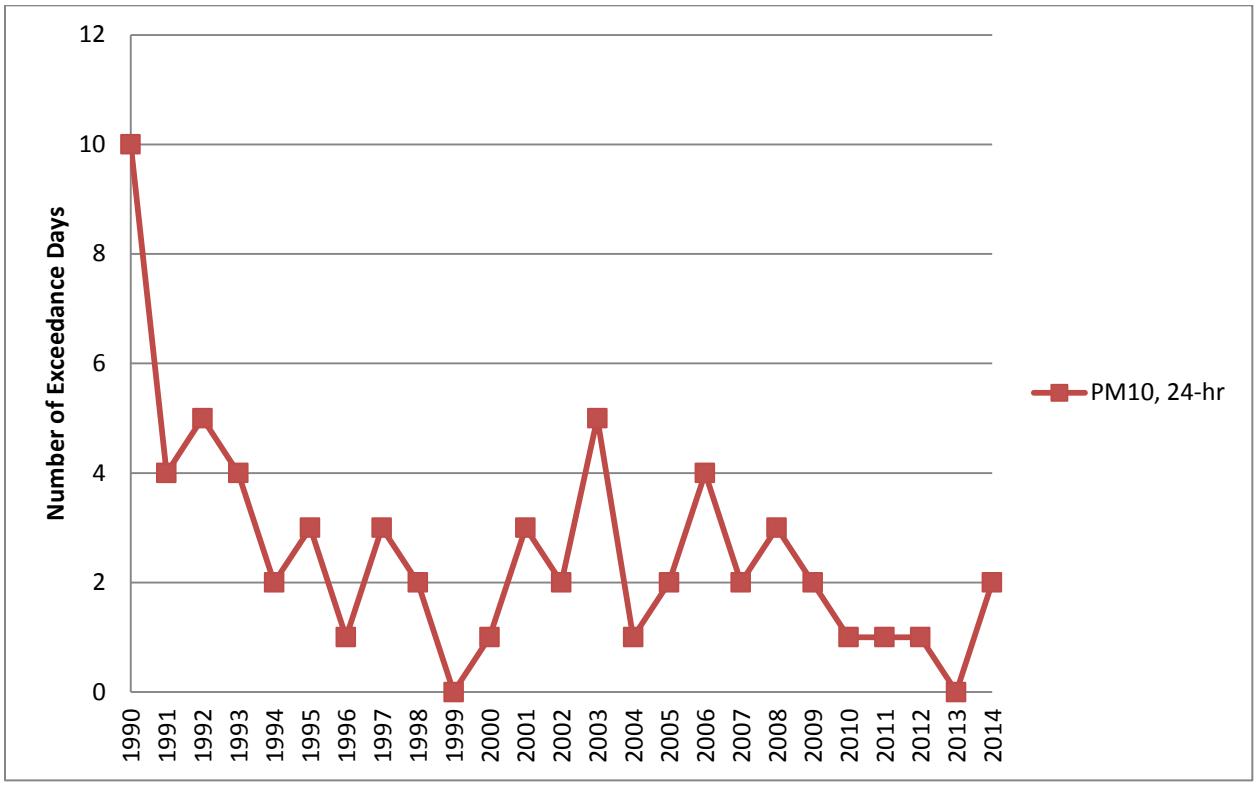
California Ambient Air Quality Standard: 24-Hr, 50 µg/m^3; Annual Arithmetic, 20 µg/m^3
National Ambient Air Quality Standard: 24-Hr, 150 µg/m^3
* Days above the state standard (calculated), rounded to nearest whole day: PM10 is monitored approximately once every six days. This value is a mathematical estimate of how many days the PM10 concentrations would have been greater than the ambient air quality standard had each day been monitored.
-- Data not available
[a] Excludes 2003 and 2007 firestorm events, second and third highest values are shown.
Source: ARB 2008, VCAPCD 2016, and ARB 2014c.

Air Quality Figure 4
Normalized PM10 Air Quality Maximum Concentrations



Source: ARB 2015a.

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



Source: ARB 2015a.

Fine Particulate Matter (PM2.5)

The SCCAB is classified as attainment for the federal and state fine particulate matter (PM2.5) standards. As shown in **Air Quality Table 6**, the highest PM2.5 concentrations are generally measured in the winter. The relative contribution of wood-smoke particles to the PM2.5 concentrations may be even higher than its relative contribution to PM10 concentrations, considering that most of the wood-smoke particles are smaller than 2.5 microns.

As **Air Quality Table 6** indicates, the 24-hour (three-year average 98th percentile) PM2.5 concentration levels and the annual average concentration levels have been declining from 1999 through 2014. These concentrations were at or above the current federal standards as of 2003, but the 24-hour concentrations have been below the federal standard since 2001 and the area is classified as attainment of that federal and state standards. The PM2.5 concentration data at the Oxnard – Rio Mesa School monitoring station has also been below the state standard since 2004 and possibly prior; however there was insufficient data prior to that year at the monitoring station for the State Annual Average.

Air Quality Table 6
PM2.5 Air Quality Summary, 1999-2014 (µg/m^3)

Year	National Maximum Daily (µg/m^3)	Month of Maximum Daily	98th Percentile Maximum Daily (µg/m^3)	State Annual Average (µg/m^3)	National Annual Average (µg/m^3)
Oxnard – Rio Mesa School					
1999	36.7	NOV	--	--	--
2000	45.7	NOV	--	--	--
2001	41.0	NOV	32.4	--	13.1
2002	29.4	AUG	27.9	--	12.9
2003	81.7[a]	OCT	28.7	--	11.7
2004	28.5	OCT	27.0	11.3	11.3
2005	35.2	MAR	23.8	10.5	10.5
2006	29.8	NOV	23.5	9.8	9.8
2007	39.9[a]	OCT	27.5	10.6	10.6
2008	23.4	NOV	19.7	10.1	10.0
2009	19.7	APR	18.9	10.2	10.2
2010	21.4	DEC	16.5	8.5	8.4
2011	18.3	MAY	17.4	11.4	8.8
2012	30.8	DEC	17.0	--	8.7
2013	19.9	OCT	17.7	--	9.4
2014	22.2	FEB	17.8	9.4	9.3

California Ambient Air Quality Standard: Annual Arithmetic Mean, 12 µg/m^3
National Ambient Air Quality Standards: 24-Hr Avg. Conc., 35 µg/m^3 (based on 98 percent of the daily concentrations, average over three years); Annual Arithmetic Mean, 12 µg/m^3
"--" = unavailable data.
[a] Excludes 2003 and 2007 firestorm events
Source: ARB 2015

Carbon Monoxide (CO)

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

Air Quality Table 7 shows the maximum one-hour and eight-hour CO concentrations monitored in Goleta, which would be expected to have very similar CO concentrations as at the project site in Oxnard due to its similar location. CO is considered a local pollutant, as it is found in high concentrations near the source of emission. High levels of CO emissions can also be generated from fireplaces and wood-burning stoves. According to the data recorded at the Goleta – Fairview air monitoring station, there have been no exceedances of the ambient air quality standards since 1992 (see **Air Quality Table 7**).

Air Quality Table 7
CO Air Quality Summary, 1992-2014 (ppm)

Year	Month of Max. 8-Hr Average	Maximum 8-Hr Average (ppm)	Maximum 1-Hr Average (ppm)
Goleta – Fairview			
1992	--	3.9	5.0
1993	--	3.4	4.0
1994	JAN	2.6	4.7
1995	JAN	1.8	4.0
1996	FEB	1.6	3.4
1997	DEC	2.0	3.5
1998	NOV	2.2	4.6
1999	FEB	1.9	3.5
2000	APR	1.6	3.1
2002	JAN	1.1	2.8
2003	OCT	1.1	1.9
2004	JAN	1.0	2.0
2005	JAN	0.8	1.8
2006	DEC	0.8	1.1
2007	NOV	1.1	2.2
2008	JAN	0.6	1.4
2009	DEC	0.6	1.6
2010	JAN	0.6	2.0
Year	**Month of Max. 8-Hr Average**	**Maximum 8-Hr Average (ppm)**	**Maximum 1-Hr Average (ppm)**
2011	DEC	0.6	2.0
2012	MAR	0.7	1.6
2013	--	--	1.0
2014	--	--	0.9

Source: ARB 2015, U.S. EPA 2015.
California Ambient Air Quality Standard: One-Hr, 20 ppm; Eight-Hr, 9.0 ppm
National Ambient Air Quality Standard: One-Hr, 35 ppm; Eight-Hr, 9 ppm

As shown in **Air Quality Table 8,** the maximum one-hour and annual concentrations of NO_2 at the Oxnard – Rio Mesa School monitoring station are lower than the California and national ambient air quality standards and typically occurred in winter or fall.

Air Quality Table 8
NO_2 Air Quality Summary, 1990-2014 (ppm)

Year	Month of Max. 1-Hr Average	Maximum 1-Hr Average (ppm)	Annual Average (ppm)
Oxnard – Rio Mesa School			
1990	JAN	0.1	0.017
1991	FEB	0.09	0.016
1992	NOV	0.063	0.013
1993	NOV	0.079	0.014
1994	NOV	0.104	0.015
1995	AUG	0.127	0.016
1996	JAN	0.11	0.015
1997	NOV	0.072	0.014
1998	JAN	0.088	0.013
1999	JAN	0.099	0.014
2000	NOV	0.074	0.014
2001	DEC	0.068	0.012
2002	OCT	0.057	0.011
2003	JAN	0.063	0.011
2004	AUG	0.07	0.011
2005	DEC	0.050	0.01
2006	JUN	0.053	0.01
2007	NOV	0.052	0.008
2008	SEP	0.051	0.008
2009	AUG	0.06	0.007
2010	AUG	0.090 (0.037)	0.007
2011	SEP	0.057 (0.033)	0.007
2012	JAN	0.040 (0.033)	0.007
2013	JAN	0.039 (0.030)	0.006
2014	JAN	0.1	0.017

California One-Hr Ambient Air Quality Standard: 0.18 ppm
California Annual Arithmetic Mean Ambient Air Quality Standard: 0.03 ppm
National One-Hr 98th Percentile Ambient Air Quality Standard: 0.100 ppm
National Annual Arithmetic Mean Ambient Air Quality Standard: 0.053 ppm
Values in "()" are the last three year 98th percentile values
Source: ARB 2015, U.S. EPA 2015.

Sulfur Dioxide (SO_2)

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

Sources of SO_2 emissions within the SCCAB come from every economic sector and include a wide variety of fuels: gaseous, liquid and solid. The SCCAB is designated attainment for all SO_2 state and federal ambient air quality standards. **Air Quality Table 9**

shows the historical one-hour, 24-hour, and annual average SO_2 concentrations collected from the UC Santa Barbara West Campus, Santa Barbara County monitoring station. As **Air Quality Table 9** shows, concentrations of SO_2 are far below the state and federal SO_2 ambient air quality standards.

Air Quality Table 9
SO_2 Air Quality Summary, 2004-2014 (ppm)

Year	Maximum 1-Hr Avg.[a]	Month of Max. 24-Hr Avg.[b]	Maximum 24-Hr Avg.[b]	Annual Average
Santa Barbara – UCSB West Campus				
2004	0.006	JAN	0.001	0.000
2005	0.006	JAN	0.002	0.000
2006	0.009	JAN	0.001	0.000
2007	0.005 (0.004)	OCT	0.001	0.000
2009	0.004 (0.004)	JAN	0.001	0.000
2010	0.005 (0.004)	DEC	0.001	0.000
2011	0.003 (0.002)	APR	0.001	0.000
2012	0.002 (0.002)	NOV	0.001	*
2013	0.002 (0.002)	MAY	0.002	*
2014	*	*	*	*

California Ambient Air Quality Standard: One-Hr, 0.25 ppm; 24-Hr, 0.04 ppm
National Ambient Air Quality Standard: One-Hr, 0.075 ppm, 99th percentile of maximum daily values
[a] Maximum 1-hr average is from the U.S. EPA website
[b] Maximum 24-hr average is from ARB website.
* data was not available
Values in "()" are the last three year full years of data 99th percentile values
Source: ARB 2015, U.S. EPA 2015.

Visibility

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

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

Summary

In summary, staff recommends the background ambient air concentrations in **Air Quality Table 10** for use in the modeling and impacts analysis. The maximum criteria pollutant concentrations from the past three years of available data collected at the monitoring stations within Ventura County are typically used to determine these recommended background values. For this project we are using data from 2012 to 2014 to determine the background concentrations, as determined by the District, since these values correspond to the meteorological and hourly background concentration data used by the District in their Air Quality Impact Analysis for P3.

Air Quality Table 10
Staff Recommended Background Concentrations (µg/m^3)

Pollutant	Averaging Time	Recommended Background	Limiting Standard	Percent of Standard
NO_2	1 hour	107	339	32%
	1 hour NAAQS	68*	188	36%
	Annual	13	57	22%
PM10	24 hour	**56.9**	**50**	**114%**
	Annual	**24**	**20**	**120%**
PM2.5	24 hour	17.8	35	50%
	Annual	9.4	12	78%
CO	1 hour	4,582*	23,000	20%
	8 hour	1,265*	10,000	12.6%
SO_2	1 hour	11	655	1.6%
	1 hour NAAQS*	8	196	4%
	3 hour	11	1,300	0.84%
	24 hour	5.2	105	5%

Source: VCAPCD 2016, highest value of the past three years
*The background value is from the PDOC modeling evaluation, because it was more conservative than what staff determined.

Where possible, staff prefers that the recommended background concentrations come from nearby monitoring stations with similar characteristics. For this project, the Oxnard –Rio Mesa School monitoring station (Ozone, PM10, PM2.5 and NO_2) is located reasonably close to the project site, approximately seven miles to the northeast. The Goleta – Fairview (CO) and Santa Barbara - UCSB (SO_2) monitoring stations are located further from the site, but considering similar climate and area as Ventura County where P3 would be located; these sites should provide conservative background concentrations for Oxnard.

The background concentrations for PM10 are at or above the most restrictive existing ambient air quality standards, while the background concentrations for the other pollutants are all below the most restrictive existing ambient air quality standards.

The pollutant modeling analysis was limited to the pollutants listed above in **Air Quality Table 10**; therefore, recommended background concentrations were not determined for the other criteria pollutants (ozone, lead, visibility, etc.).

PROJECT DESCRIPTION AND EMISSIONS

P3 project would consist of one General Electric 7HA.01 Frame natural-gas-fired combustion turbine generator (CTG) in a simple-cycle configuration, a diesel-fueled emergency generator, a repurposed electric fire water pump, and one natural gas compressor. The project would employ air cooling and would not include any other stationary criteria pollutant emission sources. The existing MGS, including boiler Units 1 and 2, along with ancillary equipment, would be removed from service after the new power plant facilities are constructed, commissioned, and begin commercial operation. The applicant has proposed to keep MGS Unit 3, which is a jet-engine–powered unit that was commissioned in 1970, and has a generating capacity of approximately 130 MW. MGS Unit 3 would continue to operate. Additionally, demolition of the MGS

Units 1 and 2 would begin within 12 months of the start of commercial operation of P3 power plant facilities. On November 19, 2015 (PPP 2015y), the applicant submitted a document called Project Enhancement and Refinement Demolition of Mandalay Generating Station as part of the P3 project design.

Demolition would consist of: (1) asbestos removal (PPP 2015y); (2) demolition to grade of MGS Units 1 and 2 turbine plant equipment and building; (3) demolition to grade of MGS Units 1 and 2 boiler plant equipment and structures; (4) demolition to grade of the 180-foot-tall stack; (PPP 2015y); (5) removal of empty hazardous-materials-contaminated equipment; and (6) removal of transformers and associated electrical equipment up to the switchyard. The specific sequencing of demolition activities would provide for coordinated removal of MGS Units 1 and 2 and continued operation and maintenance activities related to P3 and continued use of MGS Unit 3 (PPP 2015y). If P3 is approved and developed, MGS Units 1 and 2 would be decommissioned by the commercial online date of P3. Staff would like to note, MGS Unit 1 would continue to operate after the new CTG is operational, but would be permanently shut down prior to December 31, 2020. Further details on the impacts and analysis will be covered later in this Air Quality section.

The project would maximize the use of existing linear lines; therefore, little or no off-site construction is necessary for transmission, gas supply, or sewer/industrial wastewater lines for this project.

The nearest sensitive receptor to the P3 site is the Leite Family Daycare on Reef Way, approximately 1 mile (5,500 feet) to the southeast. The closest existing residential neighborhood is the Oxnard Shores Mobile Home Park, approximately 0.75 mile (or approximately 3,900 feet) to the south. There are also local farm workers located approximately 800 feet north east of P3's easterly fence line.

CONSTRUCTION

Construction of P3 would consist of multiple phases or milestones:

1. Phase I - Construction and Initial Commissioning of P3 (~18-months and 6 weeks, respectively)

2. Phase II - Retirement and Decommissioning of MGS Units 1 and 2 (~6-months) – June 2021

3. Phase III - MGS Units 1 and 2 Demolition (~15-months) – late 2022

Phase I and II were requested by the applicant in their AFC, and phase III was requested in the applicant's subsequent filing titled, "Project Enhancement and Refinement, Demolition of Mandalay Generating Station Units 1 and 2" (PPP 2015y). Phases I and II include the construction and initial commissioning of the P3 combustion turbine that are described separately in the following subsection. None of the construction/demolition phases overlap with each other. P3 operation would overlap with phase III.

The total construction period for all three phases is 39 months. During the construction and demolition periods; most of heavier construction and demolition activities, including

truck trips, would occur between 6:00 a.m. and 6:00 p.m., five days per week; and the use of heavy off-road equipment on-site would occur primarily between the hours of 7:00 a.m. and 6:00 p.m., six days per week. However, there would be times when additional hours of construction may be necessary to make up for construction delays due to weather or other unforeseen events, provided the activities comply with the local noise ordinance. Some activities would be continuous 24 hours per day, seven days per week, during some construction or demolition periods and during startup and commission of the units.

Construction laydown, along with construction worker parking areas for this project, would occupy approximately 5.7 acres in the MGS site location which would be used for construction laydown, offices, and parking. Approximately 0.9 acre of the 5.7 acres is currently paved. The remaining unpaved areas to be used for construction laydown and parking areas would be graded (as necessary), and surfaced with 4 inches of crushed rock. Construction materials such as concrete, pipe, wire and cable, fuels, reinforcing steel, and small tools and consumables would be delivered to the P3 site by truck. The heavy components, such as the combustion turbine, transformers and associated components would be transported by rail, and then trucked to the site. Union Pacific Railroad has a switchyard approximately 5 miles east of the site near Highway 1, 3rd Street, Rose Avenue, and 5th Street (AFC PPPa 2015, page 2-25).

Fugitive dust emissions during the construction of P3 power plant and MGS Units 1 and 2 demolition would result from dust entrained during demolition, site preparation and grading activities, on-site and off-site travel on paved and unpaved surfaces, and aggregate and soil loading and unloading operations, as well as wind erosion of areas disturbed during construction activities. The largest fugitive dust emissions are often generated during site preparation activities, where work such as clearing, grading, excavation of footings and foundations, and backfilling operations occur. These types of activities require the use of large earth moving equipment, which generate combustion emissions, along with creating fugitive dust emissions. Fugitive dust emissions resulting from on-site soil disturbances, such as dozing and grading, and from on-site and off-site traffic also were estimated.

Combustion emissions during the construction of P3 and demolition of MGS Units 1 and 2 would also result from off-road and on-road equipment exhaust sources, such as diesel construction equipment used for site preparation, water trucks used to control dust emissions, cranes, excavators, diesel-powered welding machines, electric generators, air compressors, water pumps, diesel trucks used for deliveries and demolition waste hauling, trains used for deliveries, and automobiles and trucks used by workers to commute to and from the construction sites. Construction/demolition emissions were estimated by the applicant for all three primary construction and demolition work phases as described below.

Phase I – Construction and Initial Commissioning of P3

Construction of P3 would take 18 months of the 21 month schedule of this phase. The peak daily and the peak annual emissions, (based on the peak 12-month period out of a proposed project schedule of 18-months) on-site, off-site and total exhaust and fugitive emissions estimated for construction of P3 are shown in **Air Quality Tables 11** and **12**.

Applicant estimates for the highest emissions during construction, which occur during initial site grading, are provided in **Air Quality Table 11**. The maximum daily emissions shown above were used for modeling maximum short-term construction period air quality impacts. The total emissions during construction based on the peak 12-month period, including onsite and offsite emissions are summarized in **Air Quality Table 12** and are shown in tons per year.

Air Quality Table 11
Summary of Onsite Construction Maximum Daily Emissions, lbs/day

Activity	NO_x	CO	VOC	SO_x	PM10	PM2.5
Onsite Emissions						
Equipment Combustion Emissions	73.6	141.7	3.7	0.2	0.4	0.4
Construction Eq. and Onsite Vehicles (Fugitive Dust)	--	--	--	--	6.3	1.9
Wind Erosion (Fugitive Dust)	--	--	--	--	0.15	0.05
Offsite Emissions						
Delivery and Haul Truck Travel	3.4	1.9	0.2	0.01	0.06	0.05
Worker Travel	1.4	14.4	0.5	0.05	0.03	0.02
Delivery and Haul Truck Travel (Fugitive Dust)					4.0	1.1
Total Maximum Daily Emissions	78.4	158.1	4.4	0.26	10.9	3.5

Source: PPP 2015a.

Air Quality Table 12
Summary of Maximum Total Annual
Construction Emissions, tons per year

Activity	NOx	CO	VOC	SOx	PM10	PM2.5
Onsite Emissions						
Equipment Combustion Emissions	8.8	17.1	0.45	0.03	0.05	0.05
Construction Eq. and Onsite Vehicles (Fugitive Dust)	--	--	--	--	0.51	0.09
Wind Erosion (Fugitive Dust)	--	--	--	--	0.02	0.01
Offsite Emissions						
Delivery and Haul Truck Travel	0.5	0.3	0.02	0.002	0.01	0.01
Worker Travel	0.2	1.7	0.06	0.006	0.003	0.003
Delivery and Haul Truck Travel (Fugitive Dust)	--	--	--	--	0.5	0.13
Total Maximum Daily Emissions	9.6	19.1	0.58	0.04	1.09	0.29

Source: PPP 2015a.

Initial commissioning, which would cover the last 6 weeks of this phase, is described below in the "Initial Commissioning" subsection.

Phase I - Initial Commissioning

The initial commissioning of a power plant refers to the time between the completion of construction and the reliable production of electricity for sale on the market. The initial commissioning of P3 is scheduled to occur during the last three months of phase II. For most power plants, normal operating emission limits usually do not apply during the initial commissioning activities. The SCR with ammonia injection and oxidation catalyst control systems will not be fully operable during all of the commissioning period as the control systems are going through a commissioning period as well. These systems do not alter the PM or SOx emissions; therefore, only the ROC, NOx, and CO emissions would be affected. The commissioning period is needed, in part, to ensure the facility's operation is fine-tuned to minimize emissions during normal operations.

Commissioning of the single combustion turbine is estimated to require 6 weeks and is estimated to require 366 firing hours for the combustion turbine, 82 of which would be without the pollution control catalysts in operation; the last 284 hours would be with the pollution control catalysts in operation (PPP 2015z, Revised Table C-2.4). After completing the commissioning period, the new unit is expected to be available for commercial operation, with pollution control catalysts fully operational and meeting all emission limit requirements. During the commissioning period, the existing MGS Units 1 and 2 as well as Unit 3 would be also available for operation as needed. The MGS Unit 1 and 2 would decommissioned directly after the successful commissioning of P3 and release for commercial operation in June 2020 (PPP 2015z). MGS Unit 1 would continue to operate after the new CTG is operational, but would be permanently shut down prior to December 31, 2020.

The project would have a total of 13 major commissioning test types, and the maximum emissions potentials are summarized in **Air Quality Table 13**. The emission rates for PM and SO_2 are not presented as they are fuel-flow based which are not controlled by the control systems and are not expected to be higher during any of the commissioning

period activities than during normal operation. The emissions from the commissioning process would be accounted for in the total annual emissions from the CTG and are shown in **Air Quality Table 13**.

Air Quality Table 13
P3 Initial Commissioning Maximum Short-Term Emissions

Time Period	NOx	CO	VOC
Maximum Hourly (lbs/hr)	246	1,973	164
Maximum Annual (tpy)	11.7	31.7	3.5

Source: PPP 2015z, GE estimates and Tables C-2.8 and C-2.9, PDOC (VCAPCD 2016)

The short-term air pollutant emissions estimates from **Air Quality Table 13** were used in air dispersion modeling impacts analysis, presented in the "Impacts" subsection, to determine the worst-case air quality impacts during initial commissioning.

Phase II – Complete Decommissioning of MGS Units 1 and 2

This phase would start after the completion of initial commissioning and the start of commercial operation of P3. This phase is estimated to require 6 months and would consist of the permanent shutdown and decommissioning MGS Units 1 and 2 and is expected to be complete by June 2021 (PPP 2015y). Other activities to be performed during this phase, that would be required prior to the initiation of MGS Units 1 and 2 Demolition, would include the removal of MGS materials and equipment that would be reused, sold, or recycled, and the removal of hazardous materials. In addition, all of the District air permits for the MGS Unit 1 and 2 boilers would be retired at the beginning of this phase.

The applicant-provided emissions estimate for Decommissioning of MGS 1 and 2, maximum daily emissions in pounds per day, can be seen in **Air Quality Table 14** (lbs/day). The applicant originally estimated, in the AFC, Decommissioning of MGS 1 and 2 would be expected to be around a 3 month period. However, in the supplemental filing titled Project Enhancement and Refinement Demolition (PPP 2015y), the applicant stated Decommissioning would take 6 months as shown in **Air Quality Table 15**. The emissions are estimated using a 6-month period, which would occur concurrently with P3 operation. However, due to the substantially lower level of activity required, this phase would have emissions that would be substantially lower than the emissions during the MGS Units 1 and 2 Demolition.

Air Quality Table 14
MGS Units 1 and 2 Decommissioning
Maximum Daily Emissions, lbs/day

Onsite Emissions:	**NOx**	**CO**	**VOC**	**SOx**	**PM10**	**PM2.5**
MGS Units 1 and 2 Decommissioning, equipment and onsite vehicles	11.29	21.71	0.60	0.04	0.06	0.06
Fugitive Dust (Onsite Vehicles)[a]	--	--	--	--	4.0E-4	1.0E-4
Offsite Emissions:	**NOx**	**CO**	**VOC**	**SOx**	**PM10**	**PM2.5**
Maximum emissions (haul, travel, delivery)[b]	0.15	1.5	0.05	0.01	0.003	0.003
Fugitive Dust (Offsite Vehicles)[a]	--	--	--	--	0.42	0.11
Total Emissions (Onsite and Offsite)	**11.44**	**23.21**	**0.65**	**0.05**	**0.48**	**0.17**

Source: AFC Table C-6-3, PPP 2015a
Notes: a. VMT is calculated using 60 miles roundtrip using CalEEMod Table C-6-15 (PPP 2015a).
b. estimation is for paved road emissions.

Air Quality Table 15
MGS Units 1 and 2 Decommissioning
Maximum Daily Emissions (6-month period), tons

Onsite Emissions:	**NOx**	**CO**	**VOC**	**SOx**	**PM10**	**PM2.5**
MGS Units 1 and 2 Decommissioning, equipment and onsite vehicles	0.88	1.7	0.04	0.002	0.004	0.004
Fugitive Dust (Onsite Vehicles)[a]	--	--	--	--	3.2E-5	8.6E-6
Offsite Emissions:	**NOx**	**CO**	**VOC**	**SOx**	**PM10**	**PM2.5**
Maximum emissions (haul, travel, delivery)[b]	0.02	0.1	0.004	4.2E-4	2.4E-4	2.4E-4
Fugitive Dust (Offsite Vehicles)[a]	--	--	--	--	0.04	0.008
Total Emissions (Onsite and Offsite)	**0.9**	**1.8**	**0.044**	**0.002**	**0.044**	**0.012**

Source: Supplemental Filing Table C-6-16 (Revised 11/18/2015), PPP 2015 y
Notes: a. VMT is calculated using 60 miles roundtrip using CalEEMod (PPP 2015a)
b. estimation is for paved road emissions

Phase III – MGS Units 1 and 2 Demolition

The 15-month demolition of the MGS Units 1 and 2 would occur after the decommissioning of the two boiler units and is expected to be completed by late 2022 (PPP 2015y). While there is no regulatory requirement that specifically forces the demolition of MGS boiler Units 1 and 2, there are requirements that would have to be followed related to the use of the ocean cooling, one of which could be the decommissioning and demolition of MGS Units 1 and 2. However, this is only one compliance option.

Demolition activities would include the use of diesel-fueled heavy equipment to demolish and remove the existing boilers, boiler building, stack and other MGS facilities. The types of direct emission sources are similar to those required for P3 construction, namely, off-road equipment, heavy haul trucks, and employee commute trips. In this case the off-road equipment is needed to demolish the structures rather than build structures, to handle demolition waste, to restore/re-grade the site; and on-road heavy truck trips are needed to haul the waste/recycled materials away rather than bring in structure components and raw construction materials.

A MGS demolition asbestos/lead removal permit would be required by the District prior to MGS demolition. The project specific emissions estimate would need to account for site specific factors, such as schedule and intensity of this demolition project, the trip distances required for demolition waste/recycle haul off, and the effectiveness of project specific mitigation measures required by the District. Regardless of the exact duration and activity of the MGS demolition activities, the emissions and ambient air quality impacts would be short-term, a few years at most, and would be mitigated as considered appropriate by District.

In addition to the short-term demolition emissions, the re-use of the MGS property after demolition and property restoration would create both short-term and long-term emissions. It is speculative at this point to determine what would be the emissions changes from site re-use construction and operation, but any such emission increases, are assumed to be well below the direct emissions that would occur during MGS demolition. Staff recommends the District consider mitigation measures as stringent as recommended Conditions of Certification **AQ-SC3** and **AQ-SC4** for fugitive dust control and **AQ-SC5** for off-road diesel fueled engine emission control.

The peak daily and the and peak annual, based on the peak 15-month period, total and on-site construction equipment exhaust and fugitive emissions estimated for MGS demolition are shown in **Air Quality Tables 16** and **17**. For comparison, the construction-period emissions estimates are shown above in **Air Quality Tables 11** and **12**.

Air Quality Table 16
Phase III – MGS Units 1 and 2 Demolition Maximum Daily Emissions, lbs/day

Onsite Emissions:	**NOx**	**CO**	**VOC**	**SOx**	**PM10**	**PM2.5**
MGS Units 1 and 2 Demolition, equipment and onsite vehicles	59.45	110.16	2.97	0.18	0.83	0.41
Offsite Emissions:	**NOx**	**CO**	**VOC**	**SOx**	**PM10**	**PM2.5**
Maximum emissions (haul, travel, delivery)	5.28	14.67	0.67	0.07	3.8	1.1
Total (onsite and offsite)	**64.7**	**124.8**	**3.6**	**0.25**	**4.6**	**1.5**

Source: (TN 206698) Table 4.1-2

Air Quality Table 17
Phase III – MGS Units 1 and 2 Demolition Peak Annual Emissions, tons/year

Onsite Emissions:	**NOx**	**CO**	**VOC**	**SOx**	**PM10**	**PM2.5**
MGS Units 1 and 2 Demolition, equipment and onsite vehicles	7.39	13.74	0.37	0.02	0.11	0.06
Offsite Emissions:	**NOx**	**CO**	**VOC**	**SOx**	**PM10**	**PM2.5**
Peak emissions (haul, worker travel, deliveries)	0.6	1.6	0.06	0.007	0.46	0.13
Total (onsite and offsite)	**8.0**	**15.3**	**0.4**	**0.027**	**0.57**	**0.19**

Source: (TN 206698) Table 4.1-13

As can be seen in air pollutant emissions estimates provided in **Air Quality Tables 11** and **12**, the construction has higher estimated emissions than those estimated for the MGS demolition due to the intensity of activities and length of the construction time period as combined to the demolition time period.

OPERATIONAL PHASE

Equipment Description

P3 would consist of one simple cycle combustion turbine, with the following major components, providing a total generating capacity of 262 MW net: (AFC PPP 2015a):

- One GE 7HA.01 combustion turbine equipped with dry ultra low NOx (Dry ULN) burners for NOx control, inlet air filters, inlet air evaporative coolers, and natural gas compressor intercooler;
- The combustion turbine would be equipped with a selective catalytic reduction (SCR) system with 19-percent aqueous ammonia injection to further reduce NOx emissions, and an oxidation catalyst to reduce CO emissions;
- One 180-foot tall, 22-foot inside diameter exhaust stack;
- A continuous emission monitoring (CEM) system installed on the stack to record concentrations of NOx, CO, and oxygen in the flue gas;
- A 779 brake-horsepower (bhp) emergency generator engine;
- An existing electric fire pump engine; and
- One natural gas-driven 50 percent capacity fuel gas compressor.

Facility Operation

The facility would be capable of operating seven days a week, 24 hours per day, and is being permitted for a maximum of 2,150 hours per year at full load operation of the combustion turbine. This is equivalent to an annual full load capacity factor of approximately 24 percent. This is an upper bound because the applicant is not able to determine the exact operating schedule for P3 since the operation profile for a peaker facility would change depending on variable demand in the service area. The MGS is permitted to operate with an annual full-load capacity factor of 100 percent[1].

Annual readiness testing (non-emergency operation) of the emergency engine would be limited to 50 hours per year. The emissions estimates assume that the total annual operation, engine testing and emergency operation, is 200 hours per year for each emergency engine.

P3 operations would require a 17-person total workforce including operators on rotating shifts and maintenance technicians. The project would require 10 plant operators, and 2 technicians, rotating 12-hour shifts, two employees per shift, and 7 days per week. The remaining administration personnel would have standard 8-hour workdays, 5 days per week. However, P3 operation would not change staffing level because P3 uses a 17-person workforce identical to the 17-person workforce which operates the existing MGS.[2]

[1] MGS Units 1 and 2 are permitted with the VCAPCD at full load, 8760 hours per year, using natural gas with a higher Heating Value (HHV) of 1050 Btu/scf.

[2] The project owner did not provide emissions data for vehicles required during the operation phase, including the trucks required for the trailer mounted water filters. Therefore, staff has not presented

Emission Controls

The exclusive use of pipeline-quality natural gas, a relatively clean-burning fuel, would limit the formation of VOC, PM10, and SO_x emissions. Natural gas contains very little noncombustible gas or solid residues and a small amount of reduced sulfur compounds, including mercaptan. One combustion turbine with inlet air coolers and post-combustion Dry Ultra Low NOx (UDLN) control with a selective catalytic reduction (SCR) system would be provided to control NOx concentrations in the exhaust gas. The SCR system would use 19 percent aqueous ammonia to reduce NOx emissions to no greater than 2.5 parts per million by volume, dry (ppmvd) adjusted to 15 percent oxygen from the combustion turbine/SCR system, averaged over a 1-hour period. Ammonia slip would be limited to 5 ppmvd at 15 percent oxygen on a dry basis. Staged combustion of a pre-mixed fuel/air charge would reduce CO and VOC emissions, and a CO oxidizing catalyst would be used to further reduce CO and VOC concentrations in the exhaust gas emitted to the atmosphere to 4.0 ppmvd and 2.0 ppmvd, respectively, adjusted to 15 percent oxygen. Particulate emissions would be controlled through the use of best combustion practices, the use of a high-efficiency inlet air filter, and the use of pipeline quality natural gas as the sole fuel source. SOx emissions would be controlled using natural gas as the sole fuel for the combustion turbine. Compliance with Best Available Control Technology requirements are described in the "Compliance with LORS" subsection.

The applicant has proposed to replace the existing emergency diesel generator engine with a new engine which would be controlled by the purchase of engines meeting the best available U.S. EPA/ARB Tier engine and using California low sulfur (15 ppm sulfur) diesel fuel. The emergency generator engine would be certified to meet U.S. EPA diesel non-road Tier 4 (final) requirements.

One 180-foot tall, 22-foot inside diameter stack would release the combustion turbine exhaust gas into the atmosphere. A continuous emission monitoring (CEM) system would be installed on the combustion turbine stack to monitor flue gas flow rate, NOx and CO concentration levels, and percentage of oxygen in the flue gas to assure adherence with the proposed emission limits. The CEM system would generate reports of emissions data in accordance with permit requirements and send alarm signals to the control room in the plant when the level of emissions approaches or exceeds pre-selected limits.

Project Operating Emissions

Expected maximum emission rates during startup and shutdown events are summarized in **Air Quality Table 18**. Hourly cold startup emissions rates reflect 30 minutes of elevated emissions followed by 30 minutes of normal operating emission levels. During shutdown, the emissions rates reflect 12 minutes of elevated emission levels preceded by 48 minutes of normal operating emissions. The applicant also expects that there could be periodic cases that would have a cold startup, a shutdown, and a warm restart event, all occurring within one hour. This case represents the worst-

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emissions from these mobile sources. The emissions from these sources would be minimal, and do not impact staff's analysis of the operations emissions.

case hourly emissions, reflecting 48 minutes of higher emissions levels in startup and 12 minutes of higher emissions levels in shutdown in one hour; however, it is expected that this would occur very infrequently. PM10 and SO_2 emissions are not shown in the **Air Quality Table 18**, since the emissions for these pollutants are not estimated to be higher or lower during startup and shutdown events than during normal operation.

Air Quality Table 18
Maximum Short-Term Event Emissions, lbs/hr

Startup/Shutdown	NOx	CO	VOC
P3 CTG Cold Startup	98.6	178.3	20.2
P3 CTG Shutdown	22.5	163.0	30.2
P3 CTG Cold Startup/Shutdown/Warm Restart	143.2	412.2	52.2

Source: PPP 2015z, Table 4.1-19 revised Nov 18, 2015; and PDOC (VCAPCD 2016)

The maximum hourly normal operating emission rates for the combustion turbine and other equipment is provided in **Air Quality Table 19.** The maximum hourly normal operating emission rates reflect the average ambient temperature full load operating case.

Air Quality Table 19
Maximum Normal Operation Emission Rates, lb/hr

P3 Operating Unit	NOx	CO	VOC	SOx[a]	PM[b]
Combustion turbine	22.9	22.3	6.4	5.5	10.1
Emergency Generator Engine	0.86	4.5	0.24	0.01	0.04
Natural Gas Compressor	--	--	0.12	--	--
P3 Maximum Emissions	23.76	26.8	6.76	5.5	10.14

Source: PPP 2015z, Table 5.1B-12; and PDOC (VCAPCD 2016)
[a] SO_2 short-term emissions are based on worst-case natural gas sulfur content of 0.75 grains/100 dry standard cubic feet. Actual likely long-term worst-case sulfur content is less than 0.25 grains/100 dry standard cubic feet.
[b] This is a short-term limit to determine maximum hourly and daily emissions limits.
[C] PM=PM10=PM2.5

The existing MGS Unit 3 CTG would continue to be operated as peaking turbine. **Air Quality Table 20** shows MGS Unit 3 permitted levels based on maximum normal operating emissions. These permitted emissions represent a permit operational limit of approximately 83 hours per year. According to the Energy Commissions' Energy Almanac, Quarterly Fuel and Energy Report (QFER) Database, over the past 5 years (2011 – 2015) MGS Unit 3 operated on average about 16.55 hours per year. The highest annual number of hours of operation was in 2015, at 31 hours. The least number of hours was in 2014 with 6.9 operational hours.

Air Quality Table 20
Existing MGS Unit 3 Permitted Emission Rates

Pollutant	Emissions Factor (lb/mmbtu)	Pounds per Hour[a]	Tons per Year
VOC	0.00756	18.07	0.75
NOx	0.462	1104.41	45.64
PM10	0.0203	48.53	2.01
Sox	0.0006	1.43	0.06
CO	0.1155	276.10	11.41

Source: PDOC (VCAPCD 2016)
[a] hourly emissions are based on emission factors and maximum heat input of 2,510 mmbtu/hr

Air Quality Table 21 summarizes the maximum (worst-case) estimated hourly and annual emissions for P3. It provides the maximum hourly commissioning emissions for comparison. The P3 combustion turbine has different emission factors associated with the various states of operation. NRG has proposed operation limits for the facility based on 200 startups, 200 shutdowns, and 1,750 hours of normal full load operation on an annual basis. The worst case combustion turbine daily operations may have four startup/shutdown cycles with the rest of the day at full load operation. The worst hourly emissions would occur when there is a cold startup then shutdown then another warm startup or restart all within the same hour. While this worst case scenario is possible, it would be infrequent (VCAPCD 2016).

Air Quality Table 21
P3 Worst-Case Hourly and Annual Emissions

Operating Units	Emissions (lbs)			
	SO_x	NO_x	CO	$PM_{10}/PM_{2.5}$
Commissioning – Maximum Hourly Emissions				
Combustion turbine	5.5	246.3	1,973	10.1
Normal Operation – Maximum Hourly Emissions				
Combustion turbine	5.5	143.2	412.2	10.1
Diesel Emergency Engine	0.008	0.86	4.48	0.03
Total	5.5	144.1	416.7	10.1
Normal Operation – Maximum Annual Emissions				
Combustion turbine	11,820	65,900	108,840	21,360
Diesel Emergency Engine	2	172	896	6
Total	11,822	66,072	109,736	21,366

Source: PDOC (VCAPCD 2016), PPP 2015z
[a] SO_2 annual emissions are based on an annual average sulfur content of 0.75 grains/100 dry standard cubic feet.
[b] The PM10 short-term limit to determine maximum hourly and daily emissions limits is 10.1 lbs/hour.

Air Quality Table 22 summarizes the estimate for the maximum annual emissions for P3, the existing MGS annual emissions baseline emission reductions as determined by VCAPCD through a review of recent emissions data (for years 2012 to 2013), and the

expected maximum annual project emission decrease from the MGS Unit 2 baseline and the project's net emission increase. MGS Unit 2 would be permanently shut down at the end of the commissioning period for the proposed combustion turbine. MGS Unit 1 would operate for a short time after the new CTG is operational, but would be permanently shut down no later than December 31, 2020. Even though MGS Unit 1 would eventually be shut down, this evaluation assumes MGS Unit 1 remains operational and the emissions associated with MGS Unit 1 are accounted for in the stationary source emissions for this project. The existing MGS existing 201 and 154 BHP emergency engines would also be replaced as part of the project.

Air Quality Table 22
P3 Maximum Annual Emissions

Emission Source	Pollutant (tons/year)				
	NOx	CO[a]	VOC	SOx	PM[b]
P3 Expected Maximum Annual Emissions[c]	32.97	54.53	10.85	7.87	10.68
Mandalay Generating Station (MGS Unit 2 only) Emissions Baseline[d]	-3.04	-25.96	-0.91	-0.39	-1.62
MGS Existing 154 BHP Emergency Engine	-0.05	-0.01	0.0	0.0	0.0
MGS Existing 201 BHP Emergency Engine	-0.07	-0.01	0.0	0.0	0.0
P3 Net Emissions Change	+29.8	+28.55	+9.94	+7.48	+9.06

Source: PDOC (VCAPCD 2016),
Notes:
[a] This represents normal operating years. For the initial commissioning year the annual CO emissions would be permitted to 102.1 tons, which for that one year of initial commissioning would result in an emission decrease of 20.0 tons.
[b] PM=PM10=PM2.5
[c] Potential emissions include the new CTG turbine and the new 779 BHP emergency engine.
[d] This baseline represents the average annual values determined by VCAPCD using their approved 2012 and 2013 annual emissions estimates for the MGS Unit 2 only. Based on Rule 26.6C, this two consecutive year period was determined to be the most representative as it best reflects current electricity market. The fuel records are from the VCAPCD Appendix D-Historical Fuel Records.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

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

METHOD AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

Staff used two main significance criteria in evaluating this project. First, all project emissions of nonattainment criteria pollutants and their precursors (NOx, VOC, PM10,

and SO_2) are considered significant cumulative impacts that must be mitigated. Second, any AAQS exceedance or any contribution to any existing AAQS exceedance caused by any project emissions is considered to be significant and must be mitigated. For construction/demolition emissions, the mitigation that is considered is limited to controlling both construction equipment tailpipe emissions and fugitive dust emissions to the maximum extent feasible. For operating emissions, the mitigation includes both feasible emission controls (BACT) and the use of emission reduction credits to offset emissions of nonattainment criteria pollutants and their precursors.

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

DIRECT/CUMULATIVE IMPACTS AND MITIGATION

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

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

U.S. EPA-approved screening (AERSCREEN) and refined) air dispersion models (AERMOD version 14134 are used to estimate the direct impacts of the project's NOx, PM10, CO, and SOx emissions resulting from project construction/demolition and operation. Additionally, the District completed an analysis of the project's operating emissions using the AERSCREEN and AERMOD (version 15181) air dispersion models in their Air Quality Impact Analysis, which was provided as Appendix G of the District's Preliminary Determination of Compliance (PDOC).

The applicant has used the AERSCREEN fumigation model, versus the previous fumigation modeling which used the SCREEN3 model. Also, in response to Energy Commission Data Request Number 59, the revised fumigation modeling includes the impacts for the new emergency generator engine and Unit 3. The maximum modeled impacts during fumigation are combined with the maximum background ambient levels and compared with the federal ambient air quality standards and results can be seen in **Air Quality Table 26**.

Staff revised the background concentrations provided by the applicant, replacing them with the ambient background concentrations determined by the District in their Air Quality Impact Analysis (AQIA), and as shown in **Air Quality Table 10**. Staff has provided the applicant (construction) or District (operation) modeled impacts with the appropriate background concentrations, and compares the results with the ambient air quality standards for each respective air contaminant to determine whether the project's emission impacts would cause a new exceedance of the ambient air quality standards or would contribute to an existing exceedance. See **Air Quality Table 22** through **27**.

The inputs for the air dispersion models include stack information (exhaust flow rate, temperature, and stack dimensions), specific turbine emission data and meteorological data, such as wind speed, atmospheric conditions, and site elevation. For this project, the meteorological data used as inputs to the model included hourly wind speeds and directions measured at the Oxnard Airport Station, which is the closest complete meteorological data source to the project site, and is meteorological data both compiled by and approved for use by the VCAPCD. The applicant modeled using data from 2009 through 2013, while the District used data from 2010 to 2014 in their Air Quality Impact Assessment (AQIA), which included reprocessing of the meteorological data using the newest version of AERMET, which is a program that process meteorological data for use in AERMOD.

Construction Impacts and Mitigation

The following section discusses the project's short-term direct and cumulative construction ambient air quality impacts, as estimated by the applicant with background concentrations from the local monitoring stations, and provides a discussion of appropriate mitigation. Staff reviewed the construction emissions estimates and air dispersion modeling procedures. Staff considers the analyses to provide an adequately conservative prediction of project construction impacts. Please see the "Cumulative Impact Analysis" section for a description of the current status of the impact analysis for the MGS demolition.

Construction Impact Analysis

The applicant used the U.S. EPA Regulatory Model (AERMOD) to estimate ambient impacts. The District does not analyze construction impacts in the AQIA in the Determination of Compliance. Therefore, for construction, the applicant's modeling analysis is analyzed. The AERMOD "OLMGROUP ALL" option was used to estimate ambient impacts from construction emissions. The modeling options and meteorological data described above were used for the modeling analysis. An NO_2/NOx ratio of 11% was used for modeling diesel construction equipment, as specified in CAPCOA's 2011 guidance document (CAPCOA, 2011).

The construction site is represented as both a set of volume sources and a separate set of area sources in the modeling analysis. Emissions are divided into three categories: exhaust emissions, mechanically generated fugitive dust emissions, and wind-blown fugitive dust emissions. Exhaust emissions and mechanically generated fugitive dust emissions (e.g., dust from wheels of a scraper) are modeled as volume sources with heights of 6 meters (for exhaust emissions) and 3 meters (for mechanically generated dust). Wind-blown fugitive dust emissions and sources at or near the ground that are at

ambient temperature and have negligible vertical velocity are modeled as area sources with a vertical height of 1 meter (PPP 2015a).

The construction impact analysis also included the emissions from the MGS boilers and combustion turbine emissions as point sources, since these units could be operating concurrently with P3 project construction activities. Values are shown in **Air Quality Table 22**.

The federal 1-hour NO_2 standard is based on three-year average of the 98th percentile daily maximum values. The construction phase would take 18 months, followed by 6 weeks of commissioning followed by 6 months of decommissioning, and then 10 out of a total 15 months would be for demolition of MGS Units 1 and 2. In **Air Quality Table 22**, the federal NO_2 1-hour NAAQS is not shown in the modeling results. For this standard, the basis of the standard is a 3-year average and given the limited length of a construction period, the applicant did not model. Staff does not expect the P3 to have a significant impact for the federal 1-hour NO_2 standard due to limited peak construction period compared to the three year averaging period for this standard.

To determine the construction impacts on short-term ambient standards (i.e. one-hour through 24-hours), the worst-case daily on-site construction emission levels were modeled. For pollutants with annual average ambient standards, the annual on-site emissions levels were added to a conservatively estimated "background" of existing emissions to determine the cumulative impact. For the modeling analysis, per the assumptions provided in the applicant's construction emissions impact analysis, it is assumed that all of the equipment would operate between 6:00 a.m. and 6:00 p.m., five days per week; and the use of heavy off-road equipment on-site would occur primarily between the hours of 7:00 a.m. and 4:00 p.m., five days per week. **Air Quality Table 22** provides the results of this modeling analysis.

During the construction of P3 and the demolition of MGS Units 1 and 2 it will be necessary to control exhaust emissions from diesel heavy equipment, and potential emissions of fugitive dust during construction and likewise demolition activities. These measures will be implemented, as needed, to avoid and/or reduce project-related impacts to air quality to less-than-significant levels.

Air Quality Table 22
P3 Maximum Onsite Construction Impacts, (µg/m^3)[a]

Pollutant	Averaging Period	Project Impact (µg/m^3)	Background (µg/m^3) [b]	Total Impact (µg/m^3)	Limiting Standard (µg/m^3)	Type of Standard	Percent of Standard
*NO_2	1 hour	188.7	107	295.7	339	CAAQS	87%
	annual	9.9	13	23	57	CAAQS	40%
PM10	24 hour	14.0	**56.9**	**71**	50	CAAQS	**142%**
	Annual	1.0	**24**	**25**	20	CAAQS	**125%**
PM2.5	24 hour	4.8	17.8	22.6	35	NAAQS	65%
	Annual	0.2	9.4	9.6	12	CAAQS	80%
CO	1 hour	1,985	4,582	6,567	23,000	CAAQS	28%
	8 hour	448	1,265	1,713	10,000	CAAQS	17%
SO_2	1 hour	3.3	11	14.3	655	CAAQS	2.2%
	1 hour NAAQS	3.3	8	11.3	196	NAAQS	5.8%
	24 hour	0.4	5.2	5.6	105	CAAQS	5.3%

Source: PPP 2015Z Table C-6-5(Revised 11/18/2015), CEC 2015jj, VCAPCD 2016
[a] In Energy Commission Data Request 51, Energy Commission staff requested that the construction air quality modeling analysis be revised to include the impacts for MGS Units 1, 2 and 3 operating in parallel with construction activities.
[b] Background values are adjusted, based on the District's evaluation in their AQIA, as presented in **Air Quality Table 10**.
* For the NO_2 1-hour NAAQS, because the basis of these standards are a 3-year average and given the limited length of construction period, the applicant did not remodel this value.

As can be seen from the modeling results provided in **Air Quality Table 22**, the construction impacts have the potential to worsen the existing violations of the 24-hour and annual PM10 ambient air quality standard and are, therefore, potentially significant. The background values alone are greater than the CAAQS for both the 24 hour and annual standards. Staff reviewed the modeled impacts including the concentration isopleths modeled over the proposed site. The maximum impacts are inside the property and on northern MGS property boundary. The impact tapers off sharply outside the MGS property boundary.

The applicant's construction modeling analysis indicates that the maximum NO_2, PM2.5, CO, and SO_2 impacts would remain below the CAAQS and NAAQS. The NOx and VOC emissions from construction, when considering their potential secondary ozone formation added to the existing ozone "background," have the potential to contribute to existing exceedances of the ozone standard and are, therefore, potentially significant. However, it is not feasible to model facility-level ozone impacts at this time.

Construction Mitigation

Staff recommends that construction PM10 and ozone precursor emission impacts be mitigated, including all required measures from the District's rules and regulations, as well as other measures considered necessary by staff to mitigate the construction emissions.

Applicant's Proposed Mitigation

The applicant's construction and demolition emissions estimates are presented in **Air Quality Tables 11** through **17**. These were used to determine the construction and modeling impact results shown in **Air Quality Table 22**. Values assume the use of

fugitive emission control measures, as well as the use of construction equipment that meets U.S. EPA/ARB Tier 4/4i non-road diesel engine standards starting with P3 construction phase.

The applicant's proposed mitigation measures are similar to the mitigation measures of other licensed Energy Commission projects. The applicant proposes the following mitigation measures to reduce the exhaust emissions from the diesel heavy equipment and fugitive dust emissions during the construction of P3 and the demolition of MGS Units 1 and 2 (data from Appendix C-6 Construction/Decommissioning Emissions):

- Unpaved surface travel and disturbed areas in the project construction site will be watered as frequently as necessary to prevent fugitive dust plumes. The frequency of watering can be reduced or eliminated during periods of precipitation.
- The vehicle speed limit will be 15 miles per hour within the construction site.
- The construction site entrances shall be posted with visible speed limit signs.
- Construction equipment vehicle tires will be inspected and washed as necessary to be cleaned free of dirt prior to entering paved roadways.
- Gravel ramps of at least 20 feet in length will be provided at the tire washing/cleaning station.
- Unpaved exits from the construction site will be graveled or treated to prevent track-out to public roadways.
- Construction/decommissioning vehicles will enter the construction site through the treated entrance roadways, unless an alternative route has been submitted to and approved by the Compliance Project Manager.
- Construction areas adjacent to any paved roadway will be provided with sandbags or other measures as specified in the Storm Water Pollution Prevention Plan (SWPPP) to prevent run-off to roadways.
- Paved roads within the construction site will be cleaned at least once per day (or less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris.
- At least the first 500 feet of any public roadway exiting from the construction site shall be cleaned at least once daily when dirt or runoff from the construction site is visible on public roadways.
- Soil storage piles and disturbed areas that remain inactive for longer than 10 days will be covered or treated with appropriate dust suppressant compounds.
- Vehicles used to transport solid bulk material on public roadways and having the potential to cause visible emissions will be provided with a cover, or the materials will be sufficiently wetted and loaded onto the trucks in a manner to provide at least one foot of freeboard.

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

The applicant proposes to have an on-site construction mitigation manager who would be responsible for the implementation of and compliance with the construction mitigation program. Documentation of the ongoing implementation and compliance with the proposed construction mitigations would be provided on a periodic basis.

Adequacy of Proposed Mitigation

Staff generally concurs with the applicant's proposed mitigation measures, which are consistent with staff's mitigation recommendations from other siting cases and appropriate for this case. Staff is recommending to incorporate these requirements with minor changes to clarify them where needed. In addition, staff recommends incorporating off-road equipment mitigation measures beyond those proposed by the applicant to ensure emissions are reduced and impacts are minimized during the construction and demolition phases of the project.

Staff Proposed Mitigation

Additional measures recommended by staff would reduce construction-phase impacts to a less than significant level by further limiting construction emissions of particulate matter and combustion contaminants. Staff concludes that the short-term and variable nature of construction and demolition activities warrants a qualitative approach to mitigation. Construction and demolition emissions and the effectiveness of mitigation varies widely depending on variable levels of activity, the timing of specific work taking place, the specific equipment, soil conditions, weather conditions, and other factors, making precise quantification of emissions and air quality impacts difficult. Despite this uncertainty, there are a number of feasible control measures that can and should be implemented to significantly reduce construction and demolition period emissions. Staff proposes that prior to the beginning of construction the facility owner should provide an Air Quality Construction Mitigation Plan (AQCMP) that specifically identifies all mitigation measures used to limit air quality impacts during construction and demolition. Staff proposes Conditions of Certification **AQ-SC1** through **AQ-SC5** to implement these requirements. These conditions update the applicant's proposed mitigation measures. Compliance with these conditions mitigate the air quality impacts to be less than significant during construction of P3 and demolition of MGS Units 1 and 2.

Staff recommends Conditions of Certification **AQ-SC1**, **AQ-SC2**, and **AQ-SC4** to apply to both construction of P3 and demolition of MGS Units 1 and 2 to emphasize that these are part of the license.

For Condition of Certification **AQ-SC3,** staff recommends the addition of a requirement to ensure that the large amount of MGS demolition waste truck traffic is routed through the Mandalay site on paved or graveled roads to reduce the on-site localized impacts of fugitive dust during the MGS demolition.

Staff is proposing Air Quality of Condition of Certification **AQ-SC5** to mitigate off-road engine impacts. Staff is recommending the base engine requirement from U.S. EPA/ARB nonroad diesel engine Tier 4 or 4i. This recommendation would require the applicant to use the cleanest engines available and provides clear direction on the steps the applicant would take if a Tier 4 or 4i engine was not available. This could potentially reduce the PM10, diesel particulate emissions and NOx emission from the off-road equipment. This is a standard requirement proposed by staff on all current projects.

Staff recommends condition **AQ-SC11** to ensure that specific major construction, demolition, and commissioning events are not performed concurrently. Staff's impact analysis conclusions are based on these events being sequential, which is how they have been identified and analyzed by the applicant.

Implementation of staff's recommended construction/demolition emission mitigation measures contained in the recommended conditions of certification would substantially reduce fugitive dust and tailpipe emissions during P3 construction and demolition phases, and reduce the potential for significant air quality impacts from these temporary emission sources.

Operation Impacts and Mitigation

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

The applicant performed direct impact modeling analyses, including operations, startup and shutdown, fumigation, decommissioning of MGS Units 1 and 2 and an initial commissioning impact analysis. The District performed these analyses in their Air Quality Impact Analysis (AQIA) that is included as an appendix in the PDOC. The District's AQIA modeling analysis results are shown below.

Operational Modeling Analysis

The applicant used the AERMOD model to estimate ambient impacts during normal operation and higher short-term emissions events, such as worst-case initial commissioning and start-up and shutdown emissions events (PPP 2015a). The District validated this modeling analysis in the PDOC AQIA (VCAPCD 2016, Appendix G) using AERMOD version 15181. The NOx emissions from internal combustion sources, such as combustion turbines, are primarily in the form of NO rather than NO_2. The NO converts into NO_2 in the atmosphere, primarily through the reaction with ambient ozone. The District based their modeling of NOx emissions on Section 5.2.4 of Appendix W, which recommends a three-tiered screening approach for NO_2 modeling. The District ran the model assuming full conversion of NO to NO_2, which is the first of the three-tiered approaches. If the analysis indicates a likely exceedance of an AAQS, the analysis proceeds to the next tier. Actual monitored hourly background ozone and NO_2 concentration data from the Oxnard Airport monitoring station (2010 to 2014 data that corresponds with the meteorological file surface data source) were used for the modeling results.

The District performed an independent analysis comparing the impacts of P3 from AERMOD using Adjusted u* option and default options (without using Adjusted u*). The PDOC shows that AERMOD predicts lower impacts with Adjusted u* option than default options, which agrees with other evaluations. **Air Quality Tables 23** through **27**, show results using the Adjusted u* option. For further justification on why staff allowed for the use of the beta option using Adjusted u*, please see the **Air Quality AIR-2** appendix to this document. The District and Energy Commission staff has concluded the Adjusted u* option improves AERMOD modeling performance. Therefore, staff concurs with the District to use of the Adjusted u* option in AERMET meteorological data and the AERMOD beta Adjusted u* option for permitting actions that are not EPA Prevention of Significant Deterioration (PSD) projects (as this is not a PSD project) (VCAPCD 2016).

The District's predicted maximum concentrations of the directly emitted (not secondarily formed) pollutants for P3 project under normal steady-state operating conditions of the combustion turbine are summarized in **Air Quality Table 23.** The District's modeling did not include modeled impacts from Unit 3 and the overlap of MGS Unit 1 operation. The District's modeling focused on the impacts associated with the operation of the P3 project, which includes the CTG and the emergency generator only. MGS Units 1, 2, and 3 are separate and not part of the scope of the P3 proposed project.

Air Quality Table 23
P3 Normal CTG Operating Impacts, and Emergency Engine

Pollutant	Averaging Period	Project Impact ($\mu g/m^3$)	Background ($\mu g/m^3$) [a]	Total Impact ($\mu g/m^3$)	Limiting Standard ($\mu g/m^3$)	Type of Standard	Percent of Standard
NO_2	1 hour	44.5	107	151.5	339	CAAQS	45%
	1 hour NAAQS	44.5	68	112.5	188	NAAQS	60%
	Annual	0.0	13	13	57	CAAQS	23%
PM10	24 hour	0.4	**56.9**	57.3	50	CAAQS	**114%**
	Annual	0.0	**24**	24	20	CAAQS	**120%**
PM2.5	24 hour	0.4	17.8	18.2	35	NAAQS	52%
	Annual	0.0	9.4	9.4	12	CAAQS	78%
CO	1 hour	207.2	4,582	4789.2	23,000	CAAQS	21%
	8 hour	80.4	1,265	1345.4	10,000	CAAQS	14%
SO_2	1 hour	0.7	11	11.7	655	CAAQS	2%
	1 hour NAAQS	0.7	8	8.7	196	NAAQS	4%
	24 hour	0.1	5.2	5.3	105	CAAQS	5%

Source: VCAPCD 2016, Appendix G Table 5-14
[a] Background values are adjusted, based on the District's evaluation in their AQIA, as presented in **Air Quality Table 10**.
Bold values show the existing background greater than the limiting standard.

The combined impacts for simultaneous operation of all sources were modeled by the applicant and results are these combined results are shown in **Air Quality Table 24**. The applicant's modeling of maximum concentrations of the directly emitted pollutants include P3 CTG and emergency generator, plus concurrent operation of MGS Units 1 and 3 under normal steady-state conditions. The results are summarized in **Air Quality Table 24**.

Air Quality Table 24
P3 Normal CTG Operating Impacts,
Emergency Generator and MGS Units 1 and 3

Pollutant	Averaging Period	Project Impact ($\mu g/m^3$)	Background ($\mu g/m^3$) [a]	Total Impact ($\mu g/m^3$)	Limiting Standard ($\mu g/m^3$)	Type of Standard	Percent of Standard
NO_2	1 hour	211.4	107	318.4	339	CAAQS	94%
	1 hour NAAQS	106.3	68	137[b]	188	NAAQS	73%
	Annual	0.0	13	13	57	CAAQS	23%
PM10	24 hour	1.6	**56.9**	58.5	50	CAAQS	**117%**
	Annual	0.0	**24**	24	20	CAAQS	**120%**
PM2.5	24 hour	1.6	17.8	19.4	35	NAAQS	55%
	Annual	0.0	9.4	9.4	12	CAAQS	78%
CO	1 hour	181.6	4,582	4763.6	23,000	CAAQS	21%
	8 hour	42.1	1,265	1307.1	10,000	CAAQS	13%
SO_2	1 hour	2.5	11	13.5	655	CAAQS	2%
	1 hour NAAQS	2.5	8	10.5	196	NAAQS	5.4%
	24 hour	0.2	5.2	5.4	105	CAAQS	5%

Source: PPP 2015z, Table 4.1-29 (Revised November 18, 2015)
[a] Background values are adjusted, based on the District's evaluation in their AQIA, as presented in **Air Quality Table 10**.
[b] Based on AERMOD results which includes the ambient background NO_2 levels.
Bold values show the existing background greater than the limiting standard.

As the differences in **Air Quality Table 23** and **Air Quality Table 24** shows, the MGS Units 1 and 3, when operating, have a much higher short-term, near-field impact potential for NOx than P3 during normal operations. The majority of the impact contribution in **Air Quality Table 24** is due to presumed ongoing operation of the existing MGS Units 1 (until December 31, 2020) and Unit 3. In each modeling scenario in **Air Quality Table 23** and **Table 24**, the results indicate that the project's normal operational impacts would not create exceedances of NO_2, SO_2, or CO standards, but could further exacerbate violations of the PM10 standards. In light of the existing state PM10 non-attainment status for the project site area, staff considers the modeled impacts to be significant and, therefore, staff is recommending appropriate mitigation. Additionally, the NOx and VOC emissions from operation, when considering their potential secondary ozone formation added to the existing ozone "background," have the potential to contribute to existing exceedances of the ozone standard and are therefore potentially significant. Therefore, staff is recommending appropriate mitigation.

Startup/Shutdown Event Modeling Impact Analysis

NOx and CO emissions are usually higher during startup and shutdown events than during steady state operation as the combustion turbine emissions are higher during the short periods of unsteady state operation for startup and shutdown and the SCR and oxidation catalyst control systems are not functioning at their peak efficiency immediately upon startup or during shutdown. The District modeled the maximum emissions from the startup/shutdown of the turbine and the predicted maximum short-term NOx and CO concentrations and results are summarized in **Air Quality Table 25.** The emergency generator engine would not be operated during commissioning of the new combustion turbine, and during startup and shutdowns of the new combustion turbine. The District did not include the engine testing during either of the two situations.

The impacts in **Air Quality Table 25** do not include the impacts of the emergency generator readiness testing, and the impacts are unknown at this time. Staff issued a Data Requests noting the modeling for startup and shutdown did not included the impacts associated with the emergency generator. In Data Responses (PPP 2015u) the applicant proposed a condition of certification that would limit readiness testing of the emergency engine. This condition would ensure readiness testing of the engine could not occur during times of a CTG during a startup or shutdown event. Because the impacts of simultaneous readiness testing of the emergency engine and a startup/shutdown even of the CTG are unknown, staff recommends **AQ-SC8** to make sure the project does not cause an exceedance of a limiting standard.

Air Quality Table 25
P3 Startup/Shutdown Impacts, (µg/m^3)

Pollutant	Averaging Period	Project Impact (µg/m^3)	Background (µg/m^3) [a]	Total Impact (µg/m^3)	Limiting Standard (µg/m^3)	Type of Standard	Percent of Standard
NO_2	1 hour	44.5	107	151.5	339	CAAQS	45%
	1 hour NAAQS	44.5	68	112.5	188	NAAQS	60%
CO	1 hour	207.2	4,582	4,789	23,000	CAAQS	21%
	8 hour	80.4	1,265	1,345	10,000	CAAQS	14%

Source: VCAPCD 2016, Appendix G Table 5-14 Level 1 AAQA results
[a] Background values are adjusted, based on the District's evaluation in their AQIA, as presented in **Air Quality Table 10**.

The modeling results indicate that the project's maximum startup/shutdown emission impacts would not cause any new significant ambient impacts associated with maximum short-term NOx and CO concentrations that could occur near the project site.

Fumigation Modeling Impact Analysis

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

As described above, fumigation conditions are short-duration events and are generally compared to one-hour standards. Two types of fumigation are analyzed using the AERSCREEN model: inversion breakup and shoreline. Inversion breakup fumigation occurs under low-wind conditions when a rising morning mixing height caps a stack (i.e., is at or right above the stack height) limiting plume rise and mixing, which fumigates the air below. Shoreline fumigation occurs near a large water body shoreline when both a roughness boundary and more dominant thermal boundary cause turbulent dispersion to be much more enhanced near the ground, fumigating air below. Currently, AERSCREEN is the only regulatory model approved by EPA for shoreline fumigation and inversion breakup modeling. AERSCREEN calculates fumigation due to inversion

break-up and shoreline fumigation for point sources with release heights (above ground level) of 10 m or more.

The District modeled the worst-case operating cases to determine the maximum fumigation impacts from the combustion turbine. The results of the District's fumigation modeling analysis are shown in **Air Quality Table 26**.

Air Quality Table 26
Maximum P3 Fumigation Impacts, (µg/m^3)

Pollutant	Averaging Period	Project Impact[1] (µg/m^3)	Background[2] (µg/m^3)	Total Impact (µg/m^3)	Limiting Standard (µg/m^3)	Type of Standard	Percent of Standard
NO_2	1 hour	63.1	107	170	339	CAAQS	50%
NO_2	1 hour	63.1	68	131	188	NAAQS	69%
PM10	24 hour	0.4	**56.9**	57.3	50	CAAQS	**114%**
PM2.5	24 hour	0.4	17.8	18.2	35	NAAQS	52%
CO	1 hour	181.6	4,582	4763	23,000	CAAQS	21%
	8 hour	42.1	1,265	1307	10,000	CAAQS	13%
SO_2	1 hour	1.3	8	9.3	196	NAAQS	5%
	24 hour	0.2	5.2	5.4	105	CAAQS	5%

Source: VCAPCD 2016, Appendix G Table 5-16
1 Fumigation modeled impact reported as the higher of the shoreline fumigation or inversion breakup fumigation concentrations.
2 Background values are adjusted, based on the District's evaluation in their AQIA, as presented in **Air Quality Table 10**.
Bold is used to show values greater than the limiting standard.

Maximum inversion breakup fumigation impacts for the turbine are higher than normal operating impacts predicted by AERMOD for NOx. The impacts under shoreline inversion fumigation conditions were found to be lower than the maximum concentrations for CO calculated under normal combustion turbine operations (see **Air Quality Table 23**). All fumigation project impact concentration levels were found to be below the CAAQS and NAAQS.

Initial Commissioning Short-Term Modeling Impact Analysis

The applicant presented several dozen initial commissioning activities and sub-activities that would occur prior to meeting normal emission limits. The worst-case initial commissioning conditions for the short-term NO_2 and CO impacts occur prior to the installation of the oxidation and SCR catalysts. The District modeled the two worst-case activities, the first being the Winter/Maximum parameters to determine the worst-case short-term NO_2 and CO impacts during initial commissioning (VCAPCD 2016). The District also modeled ISO/Minimum parameters as those parameters produced the highest impacts for PM10 and PM2.5. The results of this conservative modeling analysis are show in **Air Quality Table 27.**

Air Quality Table 27
Maximum P3 Initial Commissioning Impacts

Pollutant	Averaging Period	Project Impact ($\mu g/m^3$)	Background ($\mu g/m^3$) [a]	Total Impact ($\mu g/m^3$)	Limiting Standard ($\mu g/m^3$)	Type of Standard	Percent of Standard
NO_2 [b]	1 hour	26.2	107	133.2	339	CAAQS	39%
	1 hour NAAQS	26.2	68	94.2	188	NAAQS	50%
PM10	24 hour	0.1	**56.9**	57	50	CAAQS	**114%**
PM2.5	24 hour	0.1	17.8	17.9	35	NAAQS	51%
CO	1 hour	209.8	4,582	4,792	23,000	CAAQS	21%
	8 hour	54	1,265	1,319	10,000	CAAQS	13%

Source: VCAPCD 2016, Appendix G Table
[a] Background values are adjusted, based on the District's evaluation in their AQIA, as presented in **Air Quality Table 10**.
[b] NO_2 1-hour impacts provided in the District's AQIA are presented with background.
Bold is used to show values greater than the limiting standard.

The District's modeling analysis indicates that the project's maximum initial commissioning emission impacts are below the most stringent ambient air quality standards for NO_2 and PM2.5 and CO. The District did not include the engine testing during either of the two situations. The impacts in **Air Quality Table 27** do not include the impacts with emergency generator readiness testing, and the impacts are unknown at this time. Staff issued a Data Requests noting the modeling for commissioning did not include the impacts associated with the emergency generator. In Data Responses (PPP 2015u) the applicants proposed a condition of certification that would limit readiness testing the emergency engine. This condition would ensure readiness testing of the engine could not occur during times of CTG commissioning. Because the impacts of simultaneous readiness testing of the emergency engine and the commissioning of the CTG are unknown, staff recommends **AQ-SC8** to make sure the project does not cause an exceedance of a limiting standard.

Chemically Reactive Pollutant Impacts

Ozone Impacts

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

There are air dispersion models that can be used to quantify ozone impacts, but they are used for regional planning efforts where hundreds or even thousands of sources are input into the modeling to determine ozone impacts. There are no regulatory agency models approved for assessing single-source ozone impacts. However, because of the known relationship of NOx and VOC emissions to ozone formation, it can be said that the emissions of NOx and VOC from P3 project have the potential (if left unmitigated) to contribute to higher ozone levels in the region. These impacts would be cumulatively significant because they would contribute to ongoing violations of the state and federal ozone ambient air quality standards.

PM2.5 Impacts

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

U.S. EPA issued guidance on May 20, 2014 that requires secondary PM2.5 impacts be addressed for sources seeking PSD permits. This guidance provides several methods, or tiers, that can be used to analyze secondary PM2.5 impacts; including refined air dispersion modeling methods. P3 has been determined to not require PSD permitting, so this type of modeling analysis is not required.

Impact Summary

The project owner is proposing to mitigate the proposed project's NOx, VOC, SOx, and PM10 emissions through the use of BACT and ERCs. BACT includes limiting the ammonia slip emissions to 5 ppm. The equipment description, equipment operation, and emission control devices are provided in the Project Description and Emissions Section (above).

Operations Mitigation

The proposed P3 would mitigate air quality impacts by limiting emissions to the maximum extent feasible with the Best Available Control Technology (BACT) and by providing emission reduction credits ERCs) to mitigate impacts. The equipment descriptions and operations, and proposed emission control devices are provided in **Air Quality Project Description**.

Applicant's Proposed Mitigation

Emission Controls

As discussed in the project description section, the applicant proposes to employ combustion turbine equipped with dry low-NOx combustors and an SCR with ammonia injection for NOx control, CO catalyst for CO and VOC control, and operate exclusively on pipeline quality natural gas to limit turbine emission levels. The PDOC (VCAPCD 2016) provides the following BACT emission limits, for the combustion turbine:

- NOx: 2.5 ppmvd at 15 percent O_2 (one-hour average, excluding startup/shutdown) and 23.7 lbs/hr
- VOC: 2.0 ppmvd at 15 percent O_2 (one-hour rolling average, excluding startup/shutdown) and 6.6 lbs/hr
- PM10: 10.1 lbs/hr (10.68 tons per year)
- SO_2: 5.5 lbs/hr with fuel sulfur content of 0.75 grains/100 scf
- NH_3: 5 ppmvd at 15 percent O_2 and 17.5 lbs/hr

CO emissions do not require BACT; however, the applicant's use of a CO catalyst would control CO emissions to 4.0 ppmvd at 15 percent O_2 (one-hour rolling average, excluding startup/shutdown) and 23.1 lbs/hr. The District's PDOC conditions include provisions to meet these control emissions limits during normal operation and provide separate emission limits for startup, shutdown, and initial commissioning consistent with P3 emission levels shown in **Air Quality Tables 13, 18** and **19**.

A new diesel-fueled 779 BHP emergency engine meeting U.S.EPA/ARB Tier 4 Nonroad Diesel Engine Emission Standards is proposed. The proposed emission guarantees for the emergency engine are as follows in **Air Quality Table 28**.

AIR QUALITY Table 28
Proposed 779 BHP Emergency Engine Emission Rates[a]

Pollutant	Emergency Engine	
	g/bhp	lb/hr[b]
NOx	0.50	0.86
CO	2.6	4.48
VOC	0.14	0.24
PM10/PM2.5	0.02	0.03

From PPP 2015a, PDOC 2016.
[a] SO_2 emissions do not have emission guarantees and are based on the use of California low sulfur content diesel fuel (15 ppm sulfur) for the engine.
[b] Emergency engine readiness testing would be limited to 50 hours per year, by **AQ-DE1**.

Emission Offsets

District Rule 26.2 Section B requires NOx and VOC offsets for a new, replacement, modification, or relocated emissions unit, in this case the MGS Units 1 and 2 being replaced by the P3. This rule requires offsets if net emissions increase more than 5 tons per year for NOx or VOC and more than 15 tons per year for PM10 and SOx. The PDOC would limit P3 emissions to a level that allows P3 to be exempt from District requirements to offset new emissions of VOC. The net emissions increase from P3 would not exceed these thresholds for VOC, PM10 and SOx, therefore, SOx, PM10 and VOC offsets are not required per District rules.

Any surplus ERCs held by P3 for NOx can be used to reduce impacts remaining after meeting VCAPCD requirements. Currently at publication of this PSA, the applicant has not agreed to surrender ERCs for the proposed increases of SO_2 and PM10/PM2.5.

Adequacy of Proposed Mitigation

Emission Controls

As discussed in the project description section, the applicant proposes to employ dry lo-NOx burners, SCR with ammonia injection, CO catalyst, and operate exclusively on pipeline quality natural gas to limit combustion turbine emission levels. The emission controls meet the District rules and are adequate.

Emission Offsets

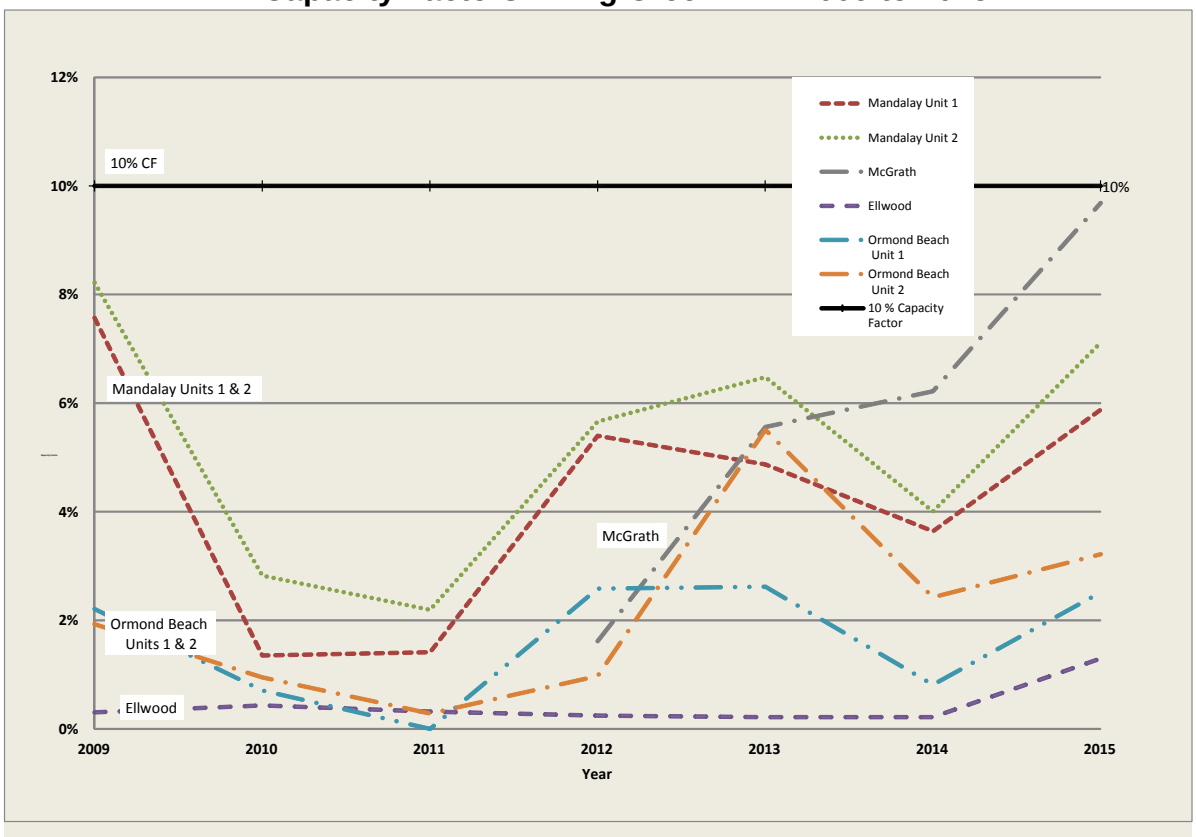
District Rule 26.6.D requires calculations of all emission increases for NOx, PM10 and VOC for new major stationary sources to determine if emission reduction credits (ERCs) are required. Net emissions are calculated by subtracting the MGS Unit 2 reduction from P3 increases, MGS Unit 1 would be allowed to continue operating until 2020 and no credit is given, even though it will be required to shut down no later than December 31, 2020. P3 has proposed the use of their currently owned facility ERCs (tons/year) to meet this District required offset obligation for NOx. The facility would be required to provide NOx offsets at a tradeoff ratio of 1.3:1 per Rule 26.2.B.2.a. Because there were no emission increases for PM10 and VOC, per District Rule 26.6.D.2 the project would not be required by District rules to provide any ERCs for these criteria pollutants. While this is adequate for meeting the District Rules and Regulations, the necessary mitigated obligation for CEQA has not been met.

Staff must receive a public filing of the proposed offset package from the applicant, including a feasible and specific approach for achieving the necessary reductions outside of the District rule requirement, before staff can evaluate the adequacy of the proposed emissions offsets for CEQA purposes. The District requires reductions needed to meet their NSR requirements at a tradeoff ratio of 1.3:1 for the project's NOx and VOC offset obligation; however, the project has not been mitigated to ensure that significant impacts of PM10 and precursors (SOx) would be mitigated in sufficient quantities.

Staff Proposed Mitigation

The data shown in **Air Quality Figure 6** and **Air Quality Table 29** were generated using the Energy Commission Almanac, QFER Database for the Big Creek Local Reliability Area (LRA) which consists of Mandalay Generating Station, McGrath Peaker, Ormond Beach Gas Power Plant, and Elwood Energy Facility. Each of these facilities is considered an aging boiler facility, with the exception of McGrath which is a simple cycle combustion turbine. Over the past few years, these facilities have been dispatched intermittently similar to the way peaking facilities are dispatched in the LRA. Energy Commission staff analyzed local generating and peaking facilities data from 2009 to 2015 and found that "peaking" units operated no more than 10 percent per year. Note that dispatch can vary due to local reliability concerns and regional issues such as a drought/limited hydro (i.e., the most recent years on the figure and table).

Air Quality Figure 6
Capacity Factors in Big Creek LRA 2009 to 2015



Source: QFER 2016

Air Quality Table 29
Capacity Factors in Big Creek LRA 2009 to 2015

		QFER Generation Based Capacity Factor					
Facility Name	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Mandalay Unit 1	7.57%	1.35%	1.41%	5.40%	4.87%	3.64%	5.88%
Mandalay Unit 2	8.22%	2.82%	2.19%	5.66%	6.48%	4.01%	7.11%
Mcgrath	**--**	**--**	**--**	**1.62%**	**5.56%**	**6.22%**	**9.69%**
Ellwood Generating Station	0.31%	0.43%	0.32%	0.25%	0.22%	0.22%	1.30%
Ormond Beach Unit 1	2.21%	0.71%	0.00	2.58%	2.62%	0.81%	2.52%
Ormond Beach Unit 2	1.93%	0.95%	0.28%	0.97%	5.51%	2.42%	3.22%
Average	4.0%	1.3%	0.8%	2.7%	4.2%	2.9%	5.0%

Source QFER 2016

Due to the similar function of these facilities to the proposed P3, staff recommends using this data to estimate P3's expected annual capacity factor to allow an estimate of the reasonably worst-case operations. **Air Quality Table 29a** summarizes the staff's

expected estimate for the expected maximum annual emissions for the P3[3], based on **Air Quality Figure 6** and **Air Quality Table 29**. The following assumptions were used by staff in determining the expected maximum annual emissions as follows:

- A 10 percent capacity factor, equivalent to approximately 876 hours per year.
- The turbine undergoes 200 startups.
- The turbine undergoes 200 shutdowns.
- The turbine operates at controlled steady state for 476 hours.
- Emergency Engines operate the same as under maximum permit basis.

The applicant has agreed to funding emission reductions through the Carl Moyer Fund or similar mechanism as proposed by the applicant in Responses to Data Requests Set 2, if appropriate (PPP 2015z). As can be seen in **Air Quality Figure 6** and **Air Quality Table 29**, the Big Creek LRA capacity factors for all projects within the associated Local Reliability Area have a capacity factor of less than 10 percent. Staff calculated mitigation based on reasonable worst case operations for P3, and mitigation provide by MGS Unit 2 shutdown. Even though MGS Unit 1 would eventually be shut down, this evaluation assumes MGS Unit 1 remains operational and the emissions associated with MGS Unit 1 are still accounted for in the stationary source emissions for this project (VCAPCD 2016). Therefore, only actual emissions[4] for MGS Unit 2 were used as a reduction in determining the total CEQA mitigation.

Air Quality Table 29a
Estimated Reasonable Worst Case Annual Emissions
(CEQA Mitigation Basis)[5], tons

	Hours/ year	NOx (tpy)	CO (tpy)	VOC (tpy)	PM10[a] (tpy)	SOx (tpy)
New GT Start-Up	200	9.9	17.8	2.0	0.9	0.5
New GT Normal Operation	476	5.5	5.4	1.5	2.4	1.3
New GT Shutdown	200	2.3	16.3	3.0	1.0	0.5
New GT Total	876	17.6	39.5	6.6	4.2	2.4
New Emergency Engine	50	0.0215	0.112	0.006	0.001	0.00025
New Natural Gas Compressor				0.00		
Reductions from MGS Unit 2		-3.04	-25.96	-0.91	-1.62	-0.39
Total to be mitigated		**14.6**	13.6	**5.7**	**2.6**	**2.0**

[a] PM10 is assumed to be equivalent to PM2.5

[3] The applicant has applied for a District permit of 1,750 normal operating hours with 200 startups and 200 shutdowns. For CEQA purposes, staff is recommending a 10 percent capacity factor as a mitigation basis.

[4] The historical fuel use was determined from fuel records from the baseline period (2012-2013). Based on Rule 26.6.C, this two consecutive year period was determined to be the most representative as it best reflects current electricity market (VCAPCD 2016).

[5] CEQA mitigation for PM is based on PM10 emissions. No mitigation is recommended for CO since it is an attainment pollutant and the project would not impact the CO attainment status.

For this project, the District's regulations would not require any offset mitigation for VOC, SOx, and PM10. As can be seen in **Air Quality Table 29a**, the total for all non-attainment pollutants (NOx and PM10) and their precursors (ROC and SOx) is in highlight and bold. Staff recommends CEQA mitigation in these amounts.

Air Quality Table 30
P3, District Offset Requirements and P3 Offset Holdings (tpy)

Source	NOx	VOC	PM10/ PM2.5	CO	SOx
Total New GT Expected Annual Maximum (Air Quality Table 29a)	17.6	6.6	4.2	39.5	2.4
Diesel Emergency Engine and Natural Gas Compressor	0.02	<0.01	0.02	0.11	< 0.01
Shutdown of MGS Unit 2	-3.04	-0.91	-1.62	-25.96	-0.39
P3 Expected Potential necessary to Mitigate for CEQA	**14.6**	**5.7**	**2.6**	13.6	**2.0**
Offset Requirements					
VCAPCD Offset Requirements	38.91 [a]	0 [b]	0 [c]	0 [d]	0 [e]
P3 Offset Holdings Certificate					
ERC Certificate Nos. 1078, 1079, 1080, 1083, 1085, 1091, 1092, 1094, 1097, 1104, and 1107.	50.66	---	---	---	---
P3 ERCs to Surrender to District Total	**38.91**	**---**	**---**	**---**	**---**
Reasonably-Foreseeable Emissions					
Expected Annual Emissions (from Table 29a)	**14.6**	**5.7**	**2.6**	**---**	**2.0**
Fully Offset for CEQA?	**Yes**	**Yes**	**No**	**---**	**No**

Source: Independent Staff Assessment; Condition **AQ-2** (VCAPCD 2016);
Notes:
a. VCAPCD offset requirements for NOx for P3 include an offset ratio of 1.3-to-1. In VCAPCD, VOC (or precursor organic compounds) offsets may be used to offset emission increases of NOx.
b. Offsets are not required by VCAPCD for VOC (ROC) since P3 would not increase emissions per Rule 26.2.B.2.b
c. Offsets are not required by VCAPCD for PM10 or PM2.5 since P3 would not increase emissions per Rule 26.2.B.2.b
d. Offset are not required by VCAPCD for CO since the area is designated as an area that attains the CO ambient air quality standards and P3 would not be subject to PSD review for CO. This Staff Assessment demonstrates that P3 would not cause or contribute to a violation of the CO ambient air quality standards.
e. Offsets are not required by VCAPCD for SO_2 since P3 would not exceed 15 tons per year.

Summary of Mitigation for Ozone Impact

Both NOx and VOC emissions are recognized precursors to the formation of ambient ozone, and NOx is also a recognized precursor to the formation of the nitrate fraction of fine particulate matter. P3 would comply with District's offset requirements and would provide ERCs for the proposed ozone precursor emissions at an offset ratio of at least one-to-one. This would satisfy the CEQA mitigation requirements for ozone impacts.

Air Quality Table 30 shows that the total amount of NOx ERCs available (50.66 tpy) exceeds staff's recommended offset requirements based on the revised potential to emit and MGS background total ozone precursor emissions increase of 14.6 for NOx and 5.7 tpy for VOC equating to around 20.3 tpy total.

Summary of Mitigation for Particulate Matter Impact

Air Quality Table 30 shows that the District does not require offsets, per their rules, for particulate matter or SOx, which is a recognized precursor to the formation of the sulfate fraction of fine particulate matter. Additionally, the applicant did not identify any offsets for mitigating the particulate matter impacts. There are no separate offset requirements for the proposed PM2.5 emissions from the applicant. Purchasing and surrendering ERCs for PM10 or SO_2 would be one optional approach for offsetting the impact, if the applicant demonstrates control of sufficient PM10 or SO_2 ERCs. The applicant would need to surrender at least 4.6 tons per year of PM10 and SO_2 combined ERCs. Aside from surrendering ERCs, certain emission-reduction programs may be funded by the applicant to achieve reductions from non-traditional sources (i.e., routinely exempt or non-stationary sources).

Based on Data Response Set 2 question 62, the applicant has suggested the use of a program, such as the Carl Moyer Program, which can achieve reductions at a cost as low as $18,030 per ton including administration fees (PPP 2015u). Although Carl Moyer Program traditionally focuses on NOx rather than PM10, the cost data for that program indicates that $99,525 could be sufficient to provide about 4.6 tons per year of particulate matter and precursor reductions (i.e., PM10 and SOx) through the Carl Moyer Program.

However, the applicant has not identified its preferred approach, and information demonstrating that the emission reductions can be feasibly achieved in the targeted quantities remains missing. At this point in the review of the case, the applicant has not identified any offset holdings or specific approaches for mitigating, for the purposes of CEQA, particulate matter impacts. The AFC and public records available from the District show the numerous PM10 and SO_2 ERCs held by other entities in the District, and the applicant may eventually opt to acquire the necessary quantity of these.

Although the applicant would satisfy the local air district requirements without surrendering any PM10 or SO_2 offsets, the absence of a feasible and specific approach to achieve reductions for PM10/PM2.5 impacts may result in P3 causing a net increase of particulate matter and precursors. Providing overall total PM10 and SO_2 ERCs for the proposed PM10/PM2.5 plus SOx emissions at an offset ratio of at least one-to-one would satisfy the CEQA mitigation requirements for particulate matter impacts.

Currently at this time, the proposed P3 project has not been fully mitigated for all its impacts. Staff is continuing the development of CEQA mitigation measures to ensure the proposed Air Quality conditions of certification would include suitable mitigation to reduce the P3's direct and cumulative Air Quality impacts to a less than significant level, including impacts to the environmental justice population. Assuming adequate mitigation is obtained, there would be no Air Quality environmental justice issues related to the P3 and no minority or low-income populations would be significantly or adversely impacted.

Adequacy of Proposed Mitigation

As required by Public Resources Code Section 25523, the Energy Commission requires that the applicant obtain all necessary emission offsets within the time required by the applicable district rules, consistent with any applicable federal and state laws and

regulations, and prior to the commencement of the operation of the proposed facility. Staff aims to demonstrate that P3 has a feasible offset and mitigation approach before concluding that this project would not result in significant air quality-related impacts.

For this project, the District's offset requirements for ozone would meet or exceed that minimum offsetting goal, while staff-recommended mitigation for particulate matter impacts would exceed the District's requirements (**Air Quality Table 30**). At the time of publication, the proposed P3 has not been fully mitigated. Staff has identified the need for additional emission reductions to fully mitigate particulate matter greater than 10 microns (PM10) and its precursor (SOx) impacts under CEQA. Staff is continuing the development of mitigation measures to ensure the proposed Air Quality conditions of certification would include suitable mitigation to reduce the P3's direct and cumulative Air Quality impacts to a less than significant level. Staff recommends a Condition of Certification (**AQ-SC9**) to ensure that significant impacts of PM10 and its precursors would be adequately mitigated and to ensure agency consultation if substitutions are made to the proposed emission reduction credits. (**Air Quality Tables 29a** and **30**).

Staff proposes Condition of Certification **AQ-SC6** to ensure that, if needed, the license would be amended as necessary to incorporate future changes to the air quality permits. Staff also proposes mitigation to ensure ongoing compliance during routine operation through quarterly reports (**AQ-SC7**).

Staff recommends **AQ-SC8** to make sure the project does not perform readiness testing during these periods to make sure P3 would not cause an exceedance of a limiting standard. Condition of Certification **AQ-SC10** establishes appropriate guidelines on what would be considered a significant change. Staff is also recommending **AQ-SC11** which specifies major construction and demolition work phases would not occur concurrently so that project impacts are not higher than those evaluated.

Staff's review of the offset package was conducted solely based on the merits of this case, including the local air district offset requirements, the project's emission limits, the specific ERCs proposed, and ambient air quality considerations of the region, and does not in any way provide a precedence or obligation for the acceptance of offset proposals for any other current or future licensing cases.

Staff has considered the minority population surrounding the site and reviewed **Socioeconomics Figure 1 and Socioeconomics Table 3** (see the **Socioeconomics** and **Executive Summary** sections of this document for further discussion of environmental justice), which shows the minority population within portions of the 6 mile buffer zone is greater than 50 percent, thus qualifying as an environmental justice population. As long as all staff-recommended conditions of certification are implemented, staff does not expect an adverse impact to members of the public, off-site nonresidential workers, recreational users or any environmental justice community.

CUMULATIVE IMPACTS

Cumulative impacts are defined as "two or more individual effects which, when considered together, are considerable or . . . compound or increase other environmental impacts" (CEQA Guidelines § 15355). "A cumulative impact consists of an impact that is

created as a result of a combination of the project evaluated in the EIR together with other projects causing related impacts" (CEQA Guidelines § 15130[a][1]). Such impacts may be relatively minor and incremental, yet still be significant because of the existing environmental background, particularly when one considers other closely related past, present, and reasonably foreseeable future projects.

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

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

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

Summary of Projections

The District has developed several plans to implement the federal Clean Air Act and state law as it addresses the cumulative air impacts of criteria pollutants in the South Central Coast Air Basin. These plans evaluate the regional context of air pollution in the air basin, and provide the air district strategies for addressing these cumulative impacts and eventually achieving "attainment" with various federal and state health-based ambient air quality standards.

The adopted air quality plans are summarized below.

Final Ventura County Triennial Assessment and Plan Update 2006- 2008
Link:
http://www.vcapcd.org/pubs/Planning/2011FinalVenturaCountyTriennialAssessment.pdf

2009 Reasonably Available Control Technology State Implementation Plan (2009 RACT SIP) Revision
Link: http://www.vcapcd.org/pubs/Planning/Final2009RActSIP.pdf

Final Ventura County 2007 Air Quality Management Plan
Link:
http://www.vcapcd.org/pubs/Planning/AQMP/FinalVenturaCounty2007AQMP.pdf

Final VCAPCD 2006 Reasonably Available Control Technology (RACT) State Implementation Plan (SIP) Revision

Link: http://www.vcapcd.org/pubs/Planning/AQMP/FinalRACTSIP.pdf

Final Ventura County Triennial Assessment and Plan Update 2006-2008

The California Clean Air Act (CAA) requires that once every three years beginning in 1994, the State's air districts are to assess their progress towards attaining the state clean air standards, the amount of emission reductions achieved over the three-year period, correct any deficiencies in meeting progress goals, and incorporate new data and projections into their state clean air plans. The most recent assessment period is 2006 through 2008.This plan does not propose any new rules or regulations or other control measures that are applicable to P3. The existing measures from the previously approved State Implementation Plans (SIPs) are included in the District's rules and regulations and ARB vehicle emission regulations. Therefore, compliance with these rules and regulations would ensure that the project conforms to this plan.

2009 Reasonably Available Control Technology State Implementation Plan (2009 RACT SIP) Revision

This plan is prepared to determine progress and measures needed to attain CAAQS for ozone, carbon monoxide, nitrogen dioxide, and sulfur dioxide. Ventura County is in attainment with all of these state standards except ozone. This plan describes the extent of ozone air quality improvement during the previous three years, provides a discussion of actual versus forecasted ozone precursor emission rates, and evaluates the need for further control measures in order to achieve attainment with the state ozone ambient air quality standards. None of the emission reduction measures proposed in this plan, which includes a Reasonably Available Control Technology (RACT) measure would apply to P3. In Ventura County, Rule 26, New Source Review, defines major stationary VOC and NOx sources as those with a potential to emit 25 tons or more of VOC or NOx, and would apply to the new combustion turbine and internal combustion engines. However P3's combustion turbine would fall under the District Rule 26.1.29 as a replacement emissions unit. Therefore, compliance with these rules and regulations would ensure that the project conforms to the eight-hour ozone maintenance plan.

Final Ventura County 2007 Air Quality Management Plan (AQMP)

Building on previous Ventura County AQMPs, the 2007 AQMP presents a combined local and state clean air strategy based on concurrent reactive organic compounds (ROG) and nitrogen oxides (NOx) emission reductions to bring Ventura County into attainment of the federal 8-hour ozone standard. ROG and NOx emitted by both anthropogenic and natural sources react in the atmosphere to produce photochemical smog, of which ozone is the principal constituent. Several of the local control measures from the 1994 AQMP are not in the 2007 AQMP. In each case, District staff determined that the measure is either obsolete or infeasible for Ventura County based on

technological or economic considerations. However, no control measure from previous AQMPs would be deleted from the 2007 AQMP that would slow the county's progress towards attaining either the federal 8-hour ozone standard or the state ozone standards. The primary requirements include attainment as soon as practicable; a major new source threshold of 50 tons per year (down from 100 tons per year); a conformity threshold of 50 tons per year (also down from 100 tons per year); new source review (NSR) emission offset ratios of 1.2 to 1; and, rate of progress ROG/NOx emissions reductions of 18 percent by 2008, 27 percent by 2011, and 30 percent by 2012. The proposed P3 would be in compliance with this plan since it is required to meet all VCAPCD rules and regulations.

Final VCAPCD 2006 Reasonably Available Control Technology (RACT) State Implementation Plan (SIP) Revision

The CAA require that states achieve the NAAQS by specified dates, based on the severity of an area's air quality problem. Ventura County is currently designated a moderate ozone nonattainment area for the new federal 8-hour ozone standard, which replaced the federal one hour ozone standard. It also required the district to review the list and adopt implementation schedules for selected measures. The VCAPCD analysis identified rules already implemented by the VCAPCD, measures that had no affected sources, measures to be analyzed and potentially implemented and measures requiring further evaluation. The proposed P3 would be in compliance with this plan since it is required to meet all VCAPCD rules and regulations.

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

Localized Cumulative Impacts

Since the power plant air quality impacts can be reasonably estimated through air dispersion modeling (see the "Operational Modeling Analysis" subsection) the project contributions to localized cumulative impacts can be estimated. To represent *past* and, to an extent, *present projects* that contribute to ambient air quality conditions, the Energy Commission staff recommends the use of ambient air quality monitoring data (see the "Environmental Setting" subsection), referred to as the *background*. The staff undertakes the following steps to estimate what are additional appropriate "present projects" that are not represented in the background and "reasonably foreseeable projects."

- First, the Energy Commission staff or the applicant works with the air district to identify all projects that have submitted, within the last year of monitoring data, new applications for an authority to construct (ATC) or permit to operate (PTO) and applications to modify an existing PTO within six miles of the project site. Based on staff's modeling experience, beyond six miles there is no statistically significant concentration overlap for non-reactive pollutant concentrations between two stationary emission sources.
- Second, the Energy Commission staff or the applicant works with the air district and local counties to identify any new area sources within six miles of the project site. As opposed to point sources, area sources include sources like agricultural fields,

residential developments or other such sources that do not have a distinct point of emission. New area sources are typically identified through draft or final Environmental Impact Reports (EIRs) that are prepared for those sources. The initiation of the EIR process is a reasonable basis on which to determine what is "reasonably foreseeable" for new area sources.

- The data submitted, or generated from the applications with the air district for point sources or initiating the EIR process for area sources, provide enough information to include these new emission sources in air dispersion modeling. Thus, the next step is to review the available EIR(s) and permit application(s), determine what sources must be modeled, and how they must be modeled.
- Sources that are not new, but may not be represented in ambient air quality monitoring are also identified and included in the analysis. These sources include existing sources that are co-located with or adjacent to the proposed source (such as the existing Mandalay Generating Station). In most cases, the ambient air quality measurements are not recorded close to the proposed project, thus a local major source might not be well represented by the background air monitoring. When these sources are included, it is typically a result of there being an existing source on the project site and the ambient air quality monitoring station being more than two miles away.
- The modeling results must be carefully interpreted so that they are not skewed towards a single source, in high impact areas near that source's fence line. It is not truly a cumulative impact of P3 if the high impact area is the result of high fence line concentrations from another stationary source and P3 is not providing a substantial contribution to the determined high impact area.

Once the modeling results are interpreted, they are added to the background ambient air quality monitoring data and thus the modeling portion of the cumulative assessment is complete. Due to the use of air dispersion modeling programs in staff's cumulative impacts analysis, the applicant must submit a modeling protocol, based on information requirements for an application, prior to beginning the investigation of the sources to be modeled in the cumulative analysis. The modeling protocol is typically reviewed, commented on, and eventually approved in the Data Adequacy phase of the licensing procedure. Staff may assist the applicant in finding sources (as described above), characterizing those sources, and interpreting the results of the modeling. However, the actual modeling runs are usually left to the applicant to complete. There are several reasons for this: modeling analyses take time to perform and require significant expertise, the applicant has already performed a modeling analysis of the project alone (see the "Operational Modeling Analysis" subsection), and the applicant can act on its own to reduce stipulated emission rates and/or increase emission control requirements as the results warrant. Once the cumulative project emission impacts are determined, the necessity to mitigate the project emissions can be evaluated, and the mitigation itself can be proposed by staff and/or the applicant (see the "Mitigation" subsection).

The list of possible new sources from the District included two sources within six miles of P3 site that would have the potential to emit more than five tons per year of any criteria pollutant (PPP 2015a, Appendix C-7). The two projects are both hospital/medical center expansions. One of the projects is at the Community Memorial Hospital located

in Ventura approximately 4.5 miles from the project site. This project could emit up to approximately 21 tons per year of CO, but would not emit more than 5 tons of any other pollutant. The other project is at the Ventura County Medical Center also located in Ventura approximately 4.7 miles from the project site, could emit up to approximately 13 tons per year of CO, but would not emit more than 5 tons of any other pollutant. Given the current state of CO attainment in the project area and the very localized nature of CO impacts, staff did not determine that there is a potential for significant cumulative impacts from this source and P3.

There are other proposed construction projects near the proposed project site such as several subdivisions of single-family homes and condos, a mobile home park, and a shopping center. However, the timeframe and emissions from these projects is unknown and these construction projects would be limited in duration. Meanwhile, emissions from existing mobile emission sources, including emissions generated from vehicles on nearby freeways, and emissions from construction emission sources, are forecast to have long-term emission reductions or significantly reduced emission potentials for most pollutants through improvements in on-road and off-road vehicle engine technology and vehicle turnover, respectively.

Considering that there are no major off-site cumulative stationary sources, or other nearby projects with known emissions estimates that could cause cumulative impacts with P3, the only quantitative cumulative analysis that can be performed is the concurrent emissions from various on-site emissions sources within the Mandalay property. The applicant prepared a cumulative air dispersion modeling analyses that included concurrent on-site emissions sources. This analysis shows the operations of P3 and the MGS Units 1 and 3. The results of this analysis are presented in **Air Quality Table 24**.

After the MGS Units 1 and 2 are decommissioned, they would undergo demolition. The applicant performed a modeling analysis on impacts during the Demolition phase and the operation phase overlap. The results of this modeling analysis are shown below in **Air Quality Table 31**.

Air Quality Table 31
Maximum Impacts for MGS Demolition and P3 Operation
Impacts Modeling Results (µg/m^3)

Pollutant	Averaging Period	Project Impact (µg/m^3)	Background (µg/m^3) [a]	Total Impact (µg/m^3)	Limiting Standard (µg/m^3)	Type of Standard	Percent of Standard
NO_2 [b]	1 hour	161.6	107	268.6	339	CAAQS	79%
	1 hour NAAQS	137.7	68	171.8[b]	188	CAAQS	91%
	Annual	8.0	13	21	57	CAAQS	37%
PM10	24 hour	2.0	**56.9**	58.9	50	CAAQS	**117%**
	Annual	0.3	**24**	24.3	20	CAAQS	**121%**
PM2.5	24 hour	0.8	17.8	18.6	35	NAAQS	53%
	Annual	0.1	9.4	9.5	12	CAAQS	79%

Source: PPP 2015z
[a] Background values are adjusted, based on the District's evaluation in their AQIA, as presented in **Air Quality Table 10**.
[b] NO_2 impacts provided are presented with background.

Phase I and II explained in the Demolition portion of this analysis were requested by the applicant in their AFC, and the last phase for P3 was requested in their subsequent filing titled, "Project Enhancement and Refinement, Demolition of Mandalay Generating Station Units 1 and 2" (PPP2015y). Phases I and II include the construction and initial commissioning of the P3 combustion turbine that are described separately in the following subsection. None of the construction/demolition phases overlap with each other. P3 operation would overlap with phase III. Staff recommends **AQ-SC11** which specifies the major construction and demolition work phases that are not allowed to occur concurrently so that project impacts are not higher than evaluated.

The results of this modeling analysis do not show significant cumulative effects during the MGS demolition period. All pollutant concentrations other than annual PM10 were determined to remain below AAQS, and the increase in annual PM10 concentrations would be negligible. Given this finding and the other cumulative impacts analysis performed, staff concludes that P3, with the recommended conditions of certification, would not have significant cumulative impacts.

COMPLIANCE WITH LORS

The District issued a Preliminary Determination of Compliance (PDOC) for P3 on May 25, 2016, with public notice occurring from May 25, 2016 through June 29, 2016 (VCAPCD 2016). The District will issue a Final Determination of Compliance (DOC) after the end of the public comment period and after consideration of the comments received from responsible agencies and the public. The District's PDOC conditions are presented in the conditions of certification, and will be updated as needed in the Final Staff Assessment.

FEDERAL

The District is responsible for issuing the Federal New Source Review (NSR) permit but is not currently delegated enforcement for the Prevention of Significant Deterioration (PSD) permitting process and has not yet been delegated enforcement of the applicable New Source Performance Standard (NSPS Subpart KKKK – Stationary Combustion Turbines). The applicant has stipulated to emission levels that ensure that the project's net emission increase of pollutants would be below PSD permit trigger levels. The District's PDOC permit conditions have been designed based on the assumption that the District will be delegated enforcement of NSPS Subpart KKKK prior to their enforcement applicability for the project.

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

Title 40 Code of Federal Regulations Part 60 Standards of Performance for New Stationary Sources

40 CFR Part 60 Subpart A –General Provisions

Any source subject to an applicable standard under 40 CFR Part 60 is also subject to the general provisions of Subpart A. Subpart A outlines general provisions for the proposed P3 including notification, work practice, monitoring and testing requirements.

40 CFR Part 60 Subpart IIII –Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

The proposed 779 BHP Caterpillar emergency diesel fired engine is subject to the Compression Ignition Internal Combustion Engine NSPS (Subpart IIII).

This section contains emission standards for the engine. The emergency engine is required to comply with the emission standards for non-road compression ignition engines. For engines in this power range and model year, these standards require the engine be certified to standards of 4.0, 3.5 and 0.20 g/kW-Hr (3.0, 2.6, 0.15 g/BHP-hr) for NMHC+NOx, CO and PM respectively, which are known as "Tier 3" standards. The proposed engine is a "Tier 4" certified engine with emission levels below these values, therefore the proposed engine meets this requirement.

Additional requirements include the use of a non-resettable hour meter, fuel standards met by using an ultra-low sulfur diesel fuel, operational requirements met by following manufacturer's procedures and record keeping provisions. Maintenance and readiness testing is limited to up to 50 hours per year. Proposed permit conditions allow the emergency engine to operate in emergency situations and for up to 50 hours per year for maintenance and readiness testing operations.

40 CFR Part 60 Subpart KKKK –Standards of Performance for Stationary Combustion Turbines

This subpart establishes NOx and SO_2 emission limits for new combustion turbines. New combustion turbines with a rated heat input greater than 850 MMBtu/hr are required to meet NOx emission limits of 15 ppm at 15 percent O_2. The fuel sulfur would be limited to 0.060 lbs SO_2 per MMBtu.

The proposed natural gas fired turbine is over 850 MMBTU/Hr, therefore the NOx limit is 15 ppmvd at 15 percent O_2 or 0.43 lb/MW-Hr. This Subpart KKKK NOx limit is less stringent than District Rule 74.23 limit (9 ppmvd NOx) and the District Rule 26.2.A NSR BACT limit of 2.5 ppmvd NOx for the unit. Therefore, new turbine compliance with the District NSR BACT requirements will comply with the Subpart KKKK.

The turbine will be fired on PUC regulated natural gas therefore the SO_2 emissions limits are either 0.90 lbs- SO_2/MWh discharge based on gross output (Section 60.4330 (a)(1)) or 0.060 lbs- SO_2/MMBTU potential in the fuel (Section 60.4330 (a)(2)). The natural gas sulfur content of the fuel will be limited to 0.75 grain per 100 scf (0.0021375 lbs- SO_2/MMBTU). This sulfur content is lower than the fuel sulfur standard. Therefore, the new turbine will comply with this section.

40 CFR Part 60 Subpart TTTT –Standards of Performance for Greenhouse Gas Emissions for Electrical Generating Units (EGU)

This subpart applies to stationary combustion turbines that commence construction after January 8, 2014. (Note: this information is included here in this PSA but may be moved to the Greenhouse Gas Appendix for the FSA.)

Section 60.5520 (a) requires the turbine to meet the applicable standard for CO_2 emissions as determined in either table 1 or 2 of the subpart. In this case the P3 turbine must meet the table 2 emission standard of 50 kg CO_2 per gigajoule (GJ) of heat input (120 lb CO_2/MMBTU).

Table 2 of NSPS Subpart TTTT CO_2 Emission Standards for Stationary Combustion Turbines	
Affected EGU	CO_2 Emission Standard
Newly constructed or reconstructed stationary combustion turbine that supplies its design efficiency or 50 percent, whichever is less, times its potential electric output or less as net-electric sales on either a 12-operating month or a 3-year rolling average basis and combusts more than 90% natural gas on a heat input basis on a 12-operating-month rolling average basis	50 kg CO_2 per gigajoule (GJ) of heat input (120 lb CO_2/MMBTU).

“Design efficiency” is defined in the rule as “the rated overall net efficiency (e.g., electric plus useful thermal output) on a lower heating value basis at the base load rating, at ISO conditions ….”

"Potential electric output" is defined in the rule as "33 percent or the base load rating design efficiency at the maximum electric production rate …, whichever is greater, multiplied by the base load rating (expressed in MMBTU/h) of the EGU, multiplied by 106 BTU/ MMBTU, divided by 3,413 BTU/KWh, divided by 1,000 kWh/MWh, and multiplied by 8,760 h/yr…" Based on the current ISO heat rate of 8,317 BTU/kWh (electrical) (LHV) and a conversion factor of 3412.1416 BTU/kWh (thermal), it takes 2.4375 kWh (thermal) input to produce 1 kWh (electrical) output (8317 BTU/kWh ÷ 3412.1416 BTU/kWh = 2.4375). The base load rating design efficiency for the P3 CTG is therefore 1 kWh (electrical) / 2.4375 kWh (thermal) = 41 percent.

The percentage electric sales threshold that distinguishes base load and non-base load units is based on the specific turbine's design efficiency (commonly known as "the sliding-scale approach") and varies from 33 to 50 percent. Specifically, all units that have annual average electric sales (expressed as a capacity factor) greater than their net lower heating value (LHV) design efficiencies (as a percentage of potential electric output) are base load units. All units that have annual average electric sales (expressed as a capacity factor) less than or equal to their net LHV design efficiencies are non-base load units. As discussed above, it is expected that on an annual average basis the new P3 CTG would supply less than one-third of its potential electric output to a utility power distribution system. Because this expected potential annual average electric sales rate is less than the 41 percent design efficiency, the new P3 CTG would be a non-base load unit under the final CPS. As a non-base load unit, under the final CPS the potential electric output for P3 is calculated as follows:

Potential electric output =

$$= Design\ efficiency\ (\%) \times\ Heat\ Input\ Rate, \frac{MMBtu}{hr} \times \frac{10^6 Btu}{MMBtu} \times \frac{1\ kWh}{3412.1416\ Btu} \times \frac{1\ MWh}{1{,}000\ kWh} \times 8{,}760 hrs/yr$$

$$= 0.41 \times 2{,}567.81 \frac{MMBtu}{hr} \times \frac{10^6 Btu}{MMBtu} \times \frac{1\ kWh}{3412.1416\ Btu} \times \frac{1\ MWh}{1{,}000\ kWh} \times 8{,}760 hrs/yr$$

$$= 2{,}702{,}862 \text{ MWh per year}$$

As long as the P3 CTG has net electric sales of less than 0.41 * 2,702,862 MWh, or 1,108,173 MWh per year, it will be subject to the 120 lb CO_2/MMBTU limit for non-base load combustion turbines. The new P3 CTG is expected to operate with an annual capacity factor of no more than 25 percent. With a full load net nominal output of approximately 262 MW, the P3 unit would supply a maximum of approximately 25 percent x 8760 hrs/year x 262 MW/Hr = 573,780 MWh per year to a utility power distribution system. Since this output is less than the allowable level of 1,108,173 MWh per year, the P3 CTG would be a non-base load unit under this rule.

The P3 turbine is limited to burning natural gas resulting in a consistent emission rate of 120 lb CO_2/MMBTU. Therefore, the facility will be required to maintain fuel purchase records of the natural gas.

40 CFR Part 63 Subpart ZZZZ –National Emission Standards for Hazardous Air Pollutant for Stationary Reciprocating Internal Combustion Engines

This subpart is applicable to owners and operators of stationary compression ignition internal combustion engines. The subpart outlines requirements for the emergency diesel engine. The emergency engine would comply with this subpart by complying with 40 CFR Subpart IIII.

40 CFR Part 64 - Compliance Assurance Monitoring (CAM)

The Compliance Assurance Monitoring (CAM) regulation applies to emission units at a major stationary source required to obtain a Title V permit, which use control equipment to achieve a specified emission limit. The section is intended to provide "reasonable assurance" that the control systems are operating properly to maintain compliance with the emission limits. CAM is applicable to the turbine because the potential to emit for the stationary source exceeds the major source thresholds (25 tons per year for ROC or NOx, and 100 tons per year for PM, SOx, or CO) for NOx and CO. However, based on section 64.2(b)(1)(vi), NOx and CO emission are exempt from CAM since the Part 70 permit for the turbine already requires a continuous compliance determination method for both NOx and CO. The turbine will have a CEM installed which will comply with this requirement.

40 CFR Part 68, List of Regulated Substances and Thresholds for Accidental Release Prevention

This regulation addresses the risk management plan (RMP) requirements of section 112(r) of the federal Clean Air Act. 40 CFR Part 68 applies to regulated substances that are contained in a process at this facility that exceed the threshold quantity, as presented in 40 CFR Part 68.130. The Selective Catalytic Reduction (SCR) system for NOx control at the CTG uses aqueous ammonia with a concentration of less than 20 percent by weight. However, aqueous ammonia must be greater than or equal to 20 percent by weight ammonia in order to be one of the regulated toxic substances listed in 40 CFR Part 68.130. Therefore, P3 is not subject to 40 CFR Part 68.

40CFR Part 75 – Continuous Emission Monitoring (CEMS)

The applicant is required to monitor NOx and CO_2 (or O_2) and has the choice of monitoring SOx or may use fuel flow monitoring and default sulfur emission factors to calculate emissions. Additionally Subpart C of this part contains requirements for operating and maintaining the CEMS to ensure that accurate, valid data is collected. The CEMS is required to be initially certified and requires recertification if certain modifications are made. Required QA activities include linearity checks, 7-day calibration error tests, and relative accuracy test audits (RATA). Linearity and calibration error tests ensure that the monitors are measuring emissions accurately. RATA compare the CEMS readings to the results determined using a source test. The RATA must be conducted annually except in certain situations where the turbine does not operate for more than 168 hours per calendar quarter. Finally, this part contains requirements for substituting data in a conservative manner for any hour when the CEMS does not record valid data, and these requirements are specified in the proposed permit conditions. Additionally the facility is required to operate according to an

approved CEMS protocol, which will contain the above requirements and specific procedures in detail.

STATE

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

The District has evaluated compliance of the 779 BHP emergency engine with Air Toxic Control Measure (ATCM) requirements under Title 17 of the California Code of Regulations. The District has determined with their PDOC permit conditions that the engine will comply with the ATCM requirements.

LOCAL

The applicant provided an air quality permit application to the District in March 2015 (PPP 2015a), and Responses to Energy Commission Data Request Set 2 with revised air quality data along with revised modeling to the Energy Commission and the District in November 2015 (PPP 2015z); and the District issued a PDOC (VCAPCD 2016), which states that the project is expected to comply with all applicable District rules and regulations.

The District rules and regulations specify the emissions control and offset requirements for new sources such as P3. Best Available Control Technology would be implemented, and ERCs for NOx based on the permitted emission levels for this project. Compliance with the District's new source requirements would ensure that the project would be consistent with the strategies and future emissions anticipated under the District's air quality attainment and maintenance plans.

Regulation II – Permits

VCAPCD Rule 26.2 through 26.13 - New Source Review Requirements

This rule establish the review requirements for new, replacements, modified or relocated facilities, in conformance with the federal New Source Review regulation to ensure that these facilities do not interfere with progress in attainment of the national ambient air quality standards and that future economic growth in Ventura County is not unnecessarily restricted. Conditions **AQ-4, AQ-38, AQ-44, AQ-47, AQ-48, AQ-50,** and **AQ-51** would ensure the project remains in compliance with Rule 26.

Rule 26.2.A requires any application for new, replacement, modified, or relocated emissions units which have a potential to emit of any criteria pollutants shall install Best Available Control Technology for such pollutant. This rule has a zero threshold for BACT for ROC, NOx, PM10, and SOx. BACT is not required for CO. The District has determined the following normal operations BACT requirements for the combustion turbines:

NOx: 2.5 ppm @15% O_2, one-hour average

VOC: 2.0 ppm @15% O_2, one-hour average

PM10: Natural gas fuel with 10.1 lbs/hour

SOx: Pipeline quality natural gas with fuel sulfur content of 0.75 gr/100 scf on a short term basis

The District also concluded that the combustion turbine start-up and shutdown emissions limits and durations proposed by the applicant meet BACT.

Rule 26.2.B details the emission offset requirements for new, replacement, modified, or relocated emissions units. There are offset requirements for ROC, NOx, PM10, and SOx. Emission offsets are not required for CO or NH_3. The offset thresholds of Rule 26.2 are exceeded for ROC, NOx and PM10. Therefore, offsets will be required for any emission increases in ROC, NOx, and PM10 as calculated pursuant to Rule 26.6, New Source Review - Calculations. There are no offsets required by the District for any SOx emission increases as the offset threshold will not be exceeded.

Rule 26.7 specifies the cases in which notification shall be provided of the Air Pollution Control Officer's preliminary decision to grant an Authority to Construct, or issue a Certificate of Emission Reduction Credit. In addition, this Rule specifies the process by which such notification shall be made. This portion of the rule requires the District to publish a notice of the proposed action in at least one newspaper of general circulation in Ventura County and requires sending notices to the U.S. EPA and the ARB. The District must allow at least 30 days for public comment and consider all comments submitted. The District must also make all information regarding the evaluation available for public inspection.

The official public notice and comment period for P3 started after a newspaper notice publication was issued on May 25, 2016 and will end on June 29, 2016. This rule requires that the District consider all comments received before issuing the Final DOC.

Rule 26.11 provides for the evaluation by the District of emission reduction credits for reactive organic compounds (ROC) and nitrogen oxides (NOx) at the time that the Authority to Construct (in this case a Determination of Compliance) is issued. As the Puente Power Project is required to provide NOx offsets as calculated above, the District shall evaluate the proposed offsets per Rule 26.11 Section B.

Pursuant to Rule 26.2.B.2.d and Rule 26.11.C.6 these NOx offsets are <u>not</u> required to be surplus at the time of use since the most recent report of the Rule 26.11 Annual Equivalency Demonstration Program shows a positive balance for NOx.

Rule 26.12 establishes what is defined as a major modification. The P3 results is a major modification for NOx only. Major modifications are also federal major modifications unless there is a less than significant emissions increase or no increase in an existing plant-wide applicability limit.

This project results in a significant emissions increase for NOx. Additionally the facility does not have an existing plant-wide applicability limit. Therefore, this project is a federal major modification for NOx emissions.

Rule 29 – Conditions on Permits

Section A of this rule requires conditions to permits which are necessary to assure that a stationary source and all emissions units at the stationary source will operate in compliance with applicable state and federal emission standards and with District Rules, including permit conditions required by Rule 26, New Source Review.

Several Air Quality conditions of certification will limit the amount of air contaminants a stationary source may emit. These emission limits are called permitted emissions and shall be expressed in pounds per hour and tons per year. In addition, conditions may include restrictions on production rates, fuel use rates, raw material use rates, hours of operation or other reasonable conditions to insure that the permitted emission limits are not exceeded.

Rule 33.5 Part 70 Permits – Timeframes for Applications, Review and Issuance

This rule contains the requirements for federal Title V Operating Permits. The applicant is required to submit a revised Title V Operating Permit application no later than 12 months after initial operation of the combustion turbine. The MGS currently has a Title V Operating Permit and the applicant will be required to submit an application to the District to modify its Title V operating permit to decommission the MGS and to cover P3. Condition of Certification **AQ-1** is to ensure the facility submits a Part 70 modification application prior to operation of the new equipment.

Rule 34 Acid Deposition Control

This rule contains the requirements for participation in the federal Acid Rain Program 40 CFR Part 72 which is incorporated into the rule. The applicant is required in the DOC conditions to submit an Acid Rain Program application to the District 24 months prior to initial startup of the combustion turbine. Condition of Certification **AQ-1** would require that project owner submit the Title IV Acid Rain permit application prior to operating the new turbine

Regulation IV – Prohibitions

Rule 50 – Opacity

Rule 50 limits visible emissions to an opacity of less than 20 percent (Ringlemann No. 1), as published by the United States Bureau of Mines. Visible emissions are not expected under normal operation from the turbine, emergency diesel engine, or ammonia tank, but will be limited by Condition of Certification **AQ-DE3**.

Rule 51 – Nuisance

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

the combustion turbine and emergency engines and by Conditions of Certification **AQ-DE7** and **AQ-DE9**.

Rule 54 - Sulfur Compounds

Rule 54 requires compliance with sulfur dioxide (SO_2) emission limits of 300 ppmv and compliance with ground level concentration limits of SO_2 (0.25 ppmv averaged over 1 hour, 0.04 ppmv averaged over 24 hours, and 0.075 ppmv 1-hour average design value). The combustion of PUC natural gas results in compliance with the 300 ppmv emission limit. Emissions from the project result in maximum modeled ground level concentrations of 1.3 $\mu g/m^3$ (0.0004 ppmv) on a 1 hour average and 0.2 $\mu g/m^3$ (0.00008 ppmv) on a 24 hour average. These concentrations are below the limits of Rule 54. See the air dispersion modeling results in Appendix G of the PDOC. Therefore, this rule does not apply.

Rule 55 Fugitive Dust

The provisions of this rule shall apply to any operation, disturbed surface area, or man-made condition capable of generating fugitive dust, including bulk material handling, earth-moving, construction, demolition, storage piles, unpaved roads, track-out, or off-field agricultural operations. This rule places limits on visible dust, opacity, and track out from activities subject to the rule.

Staff proposed Conditions of Certification **AQ-SC1** through **AQ-SC5** are mitigation measures during the construction phase of Puente Power Project that will assure compliance with this rule. Compliance with this rule is expected during the routine operation of the Puente Power Project.

Rule 57.1 Particulate Matter Emissions From Fuel Burning Equipment

The rule requires that particulate matter emissions from the turbine not exceed 0.12 pounds per million BTU of fuel input. At the manufacturer's guaranteed particulate matter emission rate of 10.1 pounds per hour (which is greater than the EPA AP-42 emission factor) and the maximum fuel input rate of 2,572 MMBTU/Hr, the particulate matter emissions are 0.004 lb per MMBTU, which is significantly less than the Rule 57.1.B limit of 0.12 lb per MMBTU. Therefore, compliance with the rule is expected.

Rule 64 Sulfur Content of Fuels

This rule prohibits the combustion of gaseous fuels that contain sulfur compounds in excess of 50 grains per 100 cubic feet (788 ppmv), calculated as hydrogen sulfide at standard conditions. The turbine will be required to burn CPUC regulated natural gas, which meets this requirement. Conditions of Certification **AQ-20** and **AQ-21** would ensure the project remains in compliance with this rule.

Rule 72

This regulation adopts federal New Source Performance Standards (NSPS, 40 CFR, Part 60) by reference. The relevant criteria pollutant NSPS subparts for P3 are Subpart KKKK (Stationary Combustion Turbines) and Subpart IIII (Stationary Compression Ignition Internal Combustion Engines). The emission limits from Subpart KKKK are less stringent than the BACT/LAER requirement of Rule 26.2 for normal operation. The

applicant is proposing newer diesel engines that meet appropriate regulation specified U.S. EPA engine tier emissions standards (Tier 4 for the emergency generator engine) that would meet the performance requirements of Subpart IIII. Conditions of certification **AQ-DE4**, **AQ-DE8**, **AQ-DE10**, and **AQ-DE11** would ensure compliance with the monitoring and record-keeping requirements of this regulation.

Rule 73

This rule adopts federal standards for hazardous air pollutants (HAPs) by reference. The project, being part of a major source of HAPs emissions, is subject to Subpart YYYY (Stationary Combustion Turbines) and Subpart ZZZZ (Compression Ignition Internal Combustion Engines). The District has incorporated conditions to ensure compliance with the emissions and operating limitations and monitoring requirements of the two applicable subparts of this regulation.

Rule 74.9, Stationary

The applicant proposes to install a 779 BHP Caterpillar emergency diesel fired internal combustion engine. The engine would provide emergency power when there is a grid electricity power failure. The applicant has indicated that it will be operated less than or equal to 50 hours per year for non-emergency use such as engine maintenance and readiness testing. A non-resettable elapsed hour meter and a limited amount of hours of non-emergency use will be limited by Condition of Certification **AQ-DE1**.

Rule 74.23 Stationary Combustion turbines

This rule requires an annual source test to verify compliance with the NOx limit. The required NOx continuous emission monitor will also verify compliance with the NOx emission limit between source tests. This rule requires records to be kept and available upon request for District inspection for 2 years. However, District Rule 103, Continuous Monitoring Systems, requires records to be kept for 5 years. The facility will be required to keep records for 5 years. It also requires the facility to provide the District with reports and data identifying the annual usage (e.g., fuel consumptions, operating hours, etc.) of the turbine and the annual compliance verification source test.

The turbine is also subject to the 20 ppmvd ammonia (NH_3) limit of Rule 74.23.B.4. The proposed ammonia limit of 5 ppmvd @ 15% oxygen is more stringent than the Rule 74.23 limit. Compliance with this ammonia limit will be verified by an annual source test and will be limited by several Air Quality conditions of certification.

Regulation VI – Source Testing and Stack Monitoring

Rule 101 Sampling and Testing Facilities

This rule requires sampling and testing of facilities that require a Permit to Operate. These facilities shall maintain and have conveniently located test openings in the stack and systems in order to measure permitted emission limits of air containment or for indicating other operating parameters. This rule is limited by Condition of Certification **AQ-8**.

Rule 102 Source Tests

This rule requires source testing in order to verify compliance with several conditions of certification. This rule requires testing shall be completed within 30 days and submitted to the District within 45 days after. This rule will be limited by Conditions of Certification **AQ-8** and **AQ-37**.

Rule 103 Continuous Monitoring System

This rule requires the project owner of an emission source required by federal regulation to install, maintain in good working order, and operate a continuous monitoring system in accordance with this rule. This rule will ensure compliance with several Air Quality conditions of certification.

CONCLUSIONS

Staff concludes that:

- The project would comply with applicable District Rules and Regulations, including New Source Review Best Available Control Technology (BACT) and offset requirements. Staff recommends the inclusion of the District's PDOC conditions as Conditions of Certification **AQ-1** through **AQ-61** for the main facility and **AQ-DE1** through **AQ-DE12** for the emergency diesel engine. Staff will present any revision to the District's DOC conditions in the Final Staff Assessment that will follow the publication of the District's Final DOC.
- The project's construction and demolition activities, if unmitigated, would likely contribute to significant adverse PM10 and ozone impacts. Therefore, staff recommends Conditions of Certification **AQ-SC1** to **AQ-SC5,** and **AQ-SC11** to mitigate these potential impacts.
- The project's operation would not cause new exceedances of any NO_2, PM2.5, or CO ambient air quality standards; therefore, the project's direct operation NOx, PM2.5, and CO emission impacts are not significant.
- With the mitigation proposed by staff and compliance with applicable air district rules, no significant direct, indirect, or cumulative adverse impacts to air quality should occur from the demolition of MGS Units 1 and 2.
- With the conditions of certification recommended by staff, including all requirements in the District's PDOC, the project will comply with all applicable LORS.
- The project's direct, or secondary, emissions contribution to existing violations of the ozone and PM10 ambient air quality standards are potentially significant if unmitigated. District rules do not require offsets to mitigate the permitted PM10 emission increase; therefore, to comply with CEQA requirements staff recommends Condition of Certification **AQ-SC9** to mitigate the potential combined PM10/SOx emission increase; nonattainment pollutant and precursor emissions would be mitigated.
- P3 would replace less efficient power plant generation in the Big Creek - Ventura LRA, reducing the GHG emissions associated and facilitating the retirement of units

at the Mandalay Generating Station and Ormond Beach Generating Station which are aging, and high GHG-emitting resources in the LRA

- Staff has considered the demographics of the population surrounding the site (see Socioeconomics Figure 1 and Socioeconomics Table 3). Since the project's direct and cumulative air quality impacts have been reduced to less than significant, staff does not expect an adverse impact to air quality of the members of the public, off-site nonresidential workers, recreational users or any environmental justice community.

Staff proposes a number of conditions of certification that are in addition to the permit conditions that the District has proposed. Condition of Certification **AQ-SC6** provides the administrative procedure requirements for project modifications. Condition of Certification **AQ-SC7** is a requirement for the project owner to submit quarterly Operation Reports at the end of each calendar quarter. Condition of Certification **AQ-SC8** is quarterly compliance reporting to ensure the emergency generator is not operated for nonemergency use whenever the combustion turbine is undergoing commissioning or during a startup/shutdown event. Condition of Certification **AQ-SC10** establishes appropriate guidelines on what would be considered a significant change. This condition is compatible with many air district rules and regulations which already have established mechanisms approved by ARB and U.S. EPA to make minor changes that do not involve significant change to existing monitoring, reporting or recordkeeping requirement or require a case by case determination of any emission limitation. This would allow the CPM to approve administrative changes (such as typographical errors, facility name or owner) and other minor changes. The condition requires the project owner to apply for approval of the change and grants authority for the CPM to approve the change before the change would become effective. Condition of Certification **AQ-SC11** specifies the major construction and demolition work phases that are not allowed to occur concurrently so that project impacts are not higher than evaluated.

Global climate change and greenhouse gas (GHG) emissions from the project are discussed and analyzed in **Appendix AIR-1**. P3, as a peaking project with an enforceable operating capacity factor of less than 60 percent is not subject to the requirements of SB1368, California's Emission Performance Standard. Additionally, the new P3 CTG is permitted to operate with an annual capacity factor of approximately 25%. P3 would be a non-base load unit under the final rule. This turbine is limited to burning natural gas resulting in a consistent emission rate of 120 lb CO_2/MMBTU or less. P3 would replace less efficient power plant generation in the Big Creek - Ventura LRA, reducing the GHG emissions associated with and facilitating the retirement of units at the MGS and Ormond Beach Generating Station which are aging, and high GHG-emitting resources in the LRA. The project would be licensed to emit as much as 0.296 million metric tons of carbon dioxide equivalent emissions and therefore it would be subject to the State cap-and-trade regulation and mandatory state and federal GHG reporting requirements.

PROPOSED CONDITIONS OF CERTIFICATION

Staff recommends the following conditions of certification to address the impacts associated with the construction and operation of the Puente Power Project (P3) and

demolition of MGS Units 1 and 2. These conditions include the District proposed conditions from the PDOC, with appropriate staff-proposed verification language added for each condition, as well as Energy Commission staff-proposed conditions. The temporary activities covered under the demolition of MGS Units 1 and 2 would be subject to the construction/demolition conditions only, while the temporary and long-term operation activities of P3 are subject to all of the proposed conditions of certification.

CEC STAFF CONDITIONS

AQ-SC1 Air Quality Construction/Demolition Mitigation Manager (AQCMM): The project owner shall designate and retain an on-site AQCMM who shall be responsible for directing and documenting compliance with conditions **AQ-SC3**, **AQ-SC4**, and **AQ-SC5** for the entire project site and linear facility construction/demolition. The on-site AQCMM may delegate responsibilities to one or more AQCMM Delegates. The AQCMM and AQCMM Delegates shall have full access to all areas of construction on the project site and linear facilities and shall have the authority to stop any or all construction/demolition activities as warranted by applicable construction/demolition mitigation conditions. The AQCMM and AQCMM Delegates may have other responsibilities in addition to those described in this condition. The AQCMM shall not be terminated without written consent of the Compliance Project Manager (CPM).

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

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

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

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

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

b) No vehicle shall exceed ten miles per hour on unpaved areas within the project and laydown construction/demolition sites.

c) The construction/demolition site entrances shall be posted with visible speed limit signs.

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

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

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

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

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

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

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

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

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

m) Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) shall be used on all construction/demolition areas that may be disturbed. Any windbreaks

installed to comply with this condition shall remain in place until the soil is stabilized or permanently covered with vegetation.

n) Disturbed areas will be re-vegetated as soon as practical.

The fugitive dust requirements listed in this condition may be replaced in the Construction Fugitive Dust Control Plan with as stringent or more stringent methods as required by VCAPCD Rule 55.

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

AQ-SC4 Dust Plume Response Requirement: The AQCMM or Delegate shall monitor all construction/demolition activities for visible dust plumes. Observations of visible dust plumes that have the potential to be transported**:** (1) off the project site**,** (2) 200 feet beyond the centerline of the construction of linear facilities, (3) within 100 feet upwind of any regularly occupied structures not owned by the project owner indicate that existing mitigation measures are not resulting in effective mitigation. The AQCMM or Delegate shall implement the following procedures for additional mitigation measures in the event that such visible dust plumes, are observed:

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

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

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

Verification: The AQCMM shall provide the CPM a MCR to include:

1. A summary of all actions taken to maintain compliance with this condition;
2. Copies of any complaints filed with the District in relation to project construction; and

3. Any other documentation deemed necessary by the CPM or AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

AQ-SC5 Diesel-Fueled Engine Control: The AQCMM shall submit to the CPM, in the Monthly Compliance Report, a construction/demolition mitigation report that demonstrates compliance with the AQCMP mitigation measures for purposes of controlling diesel construction/demolition-related emissions. The following off-road diesel construction/demolition equipment mitigation measures shall be included in the Air Quality Construction Mitigation Plan (AQCMP) required by AQ-SC2, and any deviation from the AQCMP mitigation measures shall require prior CPM notification and approval.

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

b) All construction/demolition diesel engines with a rating of 50 hp or higher shall meet, at a minimum, the Tier 4 or 4i California Emission Standards for Off-Road Compression-Ignition Engines, as specified in California Code of Regulations, Title 13, section 2423(b)(1), unless a good faith effort to the satisfaction of the CPM that is certified by the on-site AQCMM demonstrates that such engine is not available for a particular item of equipment. In the event that a Tier 4 or 4i engine is not available for any off-road equipment larger than 50 hp, that equipment shall be equipped with a Tier 3 engine, or an engine that is equipped with retrofit controls to reduce exhaust emissions of nitrogen oxides (NOx) and diesel particulate matter (DPM) to no more than Tier 3 levels unless certified by engine manufacturers or the on-site AQCMM that the use of such devices is not practical for specific engine types. For purposes of this condition, the use of such devices is "not practical" for the following, as well as other, reasons.

1. There is no available retrofit control device that has been verified by either the California Air Resources Board or U.S. Environmental Protection Agency to control the engine in question to Tier 3 equivalent emission levels and the highest level of available control using retrofit or Tier 2 engines is being used for the engine in question; or

2. The construction/demolition equipment is intended to be on site for ten working days or less.

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

c) The use of a retrofit control device may be terminated immediately, provided that the CPM is informed within ten working days of the termination and that a replacement for the equipment item in question meeting the controls required in item "b" occurs within ten days of

termination of the use, if the equipment would be needed to continue working at this site for more than 15 days after the use of the retrofit control device is terminated, if one of the following conditions exists:

1. The use of the retrofit control device is excessively reducing the normal availability of the construction/demolition equipment due to increased down time for maintenance, and/or reduced power output due to an excessive increase in back pressure.

2. The retrofit control device is causing or is reasonably expected to cause engine damage.

3. The retrofit control device is causing or is reasonably expected to cause a substantial risk to workers or the public.

4. Any other seriously detrimental cause which has the approval of the CPM prior to implementation of the termination.

d) All heavy earth-moving equipment and heavy duty construction/demolition-related trucks with engines meeting the requirements of (b) above shall be properly maintained and the engines tuned to the engine manufacturer's specifications.

e) All diesel heavy construction/demolition equipment shall not idle for more than five minutes. Vehicles that need to idle as part of their normal operation (such as concrete trucks) are exempted from this requirement.

f) Construction/demolition equipment will employ electric motors when feasible.

Verification: The AQCMM shall include in a table in the Monthly Compliance Report the following to demonstrate control of diesel construction/demolition-related emissions:

A. A summary of all actions taken to control diesel construction/demolition-related emissions;

B. A list of all heavy equipment used on site during that month, including the owner of that equipment and a letter from each owner indicating that equipment has been properly maintained; and

C. Any other documentation deemed necessary by the CPM, and the AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

AQ-SC6 The project owner shall submit to the CPM for review and approval any project air permit modification proposed by the project owner. The project owner shall submit to the CPM any modification to any permit proposed by the District or U.S. EPA and any revised permit issued by the District or U.S. EPA~~,~~ for the project.

Verification: The project owner shall submit any proposed air permit modification to the CPM within five working days for 1) documents the project owner submits to an agency, or 2) receipt of proposed modifications from an agency. The project owner shall submit all final air permits to the CPM within 15 days of receipt.

AQ-SC7 The project owner shall submit to the CPM Quarterly Operation Reports, following the end of each calendar quarter that include operational and emissions information as necessary to demonstrate compliance with the conditions of certification herein. The Quarterly Operation Report will specifically state that the facility meets all applicable conditions of certification or note or highlight all incidences of noncompliance.

Verification: The project owner shall submit the Quarterly Operation Reports to the CPM and District, if requested by the District, no later than 30 days following the end of each calendar quarter.

AQ-SC8 The emergency generator shall not be operated for nonemergency use whenever the GE 7HA.01 combustion turbine is undergoing commissioning operation and/or when the combustion turbine is undergoing a startup/shutdown event.

Verification: The project owner of this engine shall maintain a month operating log containing, at a minimum, the following:

a) Dates and times of emergency generator engine operation; whether the operation was for maintenance and readiness testing purposes or emergency use; and the nature of any emergency, if know;

b) Hours of operation for all uses other than those specified above and identification of the nature of that use.

The project owner shall submit to the CPM a copy of the monthly emergency generator engine operating log data demonstrating compliance with this condition as part of the Quality Operation Reports (**AQ-SC7**). The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-SC9 The project owner shall mitigate 2.6 tons per year (tpy) of PM10/PM2.5 and 2.0 tpy of SOx emissions by using either or a combination of the following:

a. The project owner may provide ERC's for either or both pollutants satisfying the requirements of the VCAPCD. Such ERC's shall be from emission reductions occurring within the VCAPCD air basin and shall be applied at a 1:1 offset ratio.

b. Diesel emission reduction projects funded by the Ventura County Air Pollution Control District with the funds contributed by the project owner shall be weighted for evaluation, qualification, and selection, in accordance with the California Air Resources Board's Carl Moyer Program Guidelines. Other emission reduction projects with the cost-effectiveness of $18,030 per tpy may be selected by the Ventura County Air Pollution Control District.

The CPM, in consultation with the District, may approve any such change to the ERC list provided that the project remains in compliance with all applicable laws, ordinances, regulations, and standards, and that the requested change(s) will not cause the project to result in a significant environmental impact. The District must also confirm that each requested change is consistent with applicable federal and state laws and regulations.

Verification: Verification The project owner shall submit to the CPM confirmation that the appropriate initial funding has been provided within 90 days after the issuance of the Authority to Construct (ATC). The project owner shall provide quarterly summaries of the emission reduction project selection information to the CPM for review until such time that all funds have been committed by the Ventura Air Pollution Control District to qualifying projects. The project owner shall submit to the CPM confirmation that the appropriate funding has been provided to the District, and/or ERC's have been surrendered at least 30 days prior to turbine first fire.

AQ-SC10 The project owner shall comply with all staff (**AQ-SC**) and district (**AQ**) conditions of certification. The CPM, in consultation with the District, may approve any change to a Condition of Certification regarding air quality, as a staff approved modification, provided that: (1) the Project remains in compliance with all applicable laws, ordinances, regulations, and standards, (2) the requested change clearly will not cause the Project to result in a significant environmental impact, (3) no additional mitigation or offsets will be required as a result of the change, (4) no existing daily, quarterly, or annual permit limit will be exceeded as a result of the change, and (5) no increase in any daily, quarterly, or annual permit limit will be necessary as a result of the change.

Verification: The project owner shall submit a petition to amend for any proposed change to a condition of certification pursuant to this condition and shall provide the CPM with any additional information the CPM requests to substantiate the basis for approval.

AQ-SC11 The project owner shall not allow the overlap of specific construction and demolition phase activities. The following activities shall not be conducted concurrently with any of the other listed activities:

1. P3 Construction

2. MGS Units 1 and 2 demolition

In addition, the combustion turbine's initial commissioning activity and the EPS demolition activity shall not be performed concurrently.

Verification: The project owner shall identify the start and conclusion of the work phases described above in the Monthly Compliance reports.

District Preliminary Determination of Compliance Proposed Permit Conditions (VCAPCD 2016)

Combustion Turbine Conditions

AQ-1 Prior to completion of construction, the project owner shall submit an application for a revised Title V Part 70 Permit for the Mandalay Generating Station. The application shall also include the Title IV Acid Rain Permit application, VCAPCD Permit to Operate application, and all applicable supplementary forms and filing fees**.**

Verification: The project owner shall submit to the CPM copies of the acid rain permit application within five working days of its submittal by the project owner to the District.

AQ-2 Prior to operation of the new CTG, the project owner shall surrender NOx emission reduction credits (ERCs) in the amount of 38.91 tons per year. The project owner shall cancel the permit for Mandalay Generating Station (MGS) Unit 2 prior to the commissioning of the new Puente Power Project CTG.

Verification: The project owner shall submit to the CPM, within 30 days of ERC surrender to the District, information demonstrating compliance with this condition.

AQ-3 The project owner shall use any of the following ERC Certificates to satisfy the NOx emission offset requirements of Rule 26.2: ERC Certificate Nos. 1078, 1079, 1080, 1083, 1085, 1091, 1092, 1094, 1097, 1104, and / or 1107.

Verification: The project owner shall submit to the CPM confirmation that the appropriate quantity of ERCs have been provided at least 30 days prior to turbine first fire.

AQ-4 The combustion turbine generator (CTG) lube oil vents and the electrical generator lube oil vents shall be equipped with mist eliminators to maintain visible emissions from lube oil vents to no greater than 5% opacity, except for no more than three minutes in any one hour. (Rule 26)

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

AQ-5 The CTG shall be operated with a continuously recording fuel gas flowmeter. The flowmeter shall be installed, calibrated, maintained, and operated according to the manufacturer's instructions. Alternatively, a gas fuel flowmeter that meets the installation, certification, and quality assurance requirements of Appendix D to 40 CFR Part 75 is acceptable for use. (Rules 26.2 and 74.23, 40 CFR Part 60 Subpart KKKK and 40 CFR Part 75)

Verification: The project owner shall submit to the CPM the natural gas usage data from the fuel flow meters as part of the Quarterly Operation Report (**AQ-SC7**).

AQ-6 The CTG exhaust after the SCR (selective catalytic reduction) unit shall be equipped with continuously recording emissions monitors (CEM) for NOx, CO, and O_2. Continuous emissions monitors shall meet the requirements of Rule 74.23, Rule 103, 40 CFR Part 60, Appendices B and F, 40 CFR Part 60 Subpart KKKK, and 40 CFR Part 75, Appendices A and B, as applicable, and shall be capable of monitoring emissions during startups, shutdowns, and unplanned load changes as well as normal operating conditions. (Rules 74.23 and 103, 40 CFR Part 60 Subpart KKKK, and 40 CFR Part 75)]

Verification: The project owner shall submit to the CPM for review and the District for approval a turbine operation monitoring protocol in compliance with this condition at least 90 days prior to the initial startup of the combustion turbine.

AQ-7 CEM cycling times shall be those specified in 40 CFR Part 60, Subpart KKKK and 40 CFR, Part 51, Appendix P, Sections 3.4, 3.4.1 and 3.4.2, or shall meet equivalent specifications established by mutual agreement of the District, the ARB and the EPA. For NOx monitoring for 40 CFR Part 60 Subpart KKKK, during each full unit operating hour, both the NOx monitor and the diluent monitor must complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each 15-minute quadrant of the hour, to validate the hour. For partial unit operating hours, at least one valid data point must be obtained with each monitor for each quadrant of the hour in which the unit operates. For unit operating hours in which required quality assurance and maintenance activities are performed on the CEMS, a minimum of two valid data points (one in each of two quadrants) are required for each monitor to validate the NOx emission rate for the hour. (Rule 103 and 40 CFR Part 60 Subpart KKKK)

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

AQ-8 The exhaust stack of the CTG shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NOx, CO, and O_2 analyzer during District inspections. The sampling ports shall be located in accordance with the ARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Source Emission Monitoring and Testing. (Rules 74.23, 101, and 102)

Verification: The project owner shall submit to the CPM for review and District for approval a stack test port and platform plan at least 90 days before the construction of the turbine stacks.

AQ-9 Results of continuous emissions monitoring shall be reduced according to the procedure established in 40 CFR Part 60, Subpart KKKK, 40 CFR Part 75 Appendix F, and 40 CFR, Part 51, Appendix P, paragraphs 5.0 through 5.3.3, or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the U.S.EPA. (Rule 103, 40 CFR Part 60 Subpart KKKK, and 40 CFR Part 75)

Verification: None required.

AQ-10 Audits of continuous emission monitors shall be conducted quarterly, except during quarters in which relative accuracy and total accuracy testing is performed, in accordance with U.S.EPA guidelines. The District and CPM shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District upon request. (Rule 103)

Verification: The project owner shall submit to the CPM for review and the District for approval the periodic RATA and source test protocols, and RATA source test reports within the timeframes specified in Condition **AQ-11.**

AQ-11 The project owner shall perform a relative accuracy test audit (RATA) as specified by 40 CFR Part 60, Appendix F at least once every four calendar quarters. The project owner shall perform a relative accuracy test audit (RATA) as specified by 40 CFR Part 75, Appendix B at least once every two calendar quarters unless the project owner achieves 7.5% or below relative accuracy, then the project owner meets the incentive of 7.5% or less relative accuracy, then perform RATA once every four calendar quarters. The project owner shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emission monitor equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F. (Rule 103 and 40 CFR Part 75)

Verification: The project owner shall submit to the CPM for review and the District for approval the periodic RATA and source test protocols, and RATA source test reports within the timeframes specified in this condition**.**

AQ-12 The project owner shall report any violation of the NOx and CO emissions limit of this permit, as measured by the CEMS, in writing to the District and CPM within 96 hours of each occurrence. (Rule 103)

Verification: The project owner shall notify the District and CPM within 96 hours of each occurrence regarding any emission standard violation and shall document all such occurrences in each Quarterly Operation Report **(AQ-SC7)**.

AQ-13 The project owner shall maintain permanent continuous monitoring records, in a form suitable for inspection, for a period of at least five (5) years. Such

records shall be made available to the Air Resources Board or the District upon request. The report shall include the following:

1. Time intervals of report,

2. The date, time and duration of any startup, shutdown or malfunction in the operation of the gas turbine and CEMS,

3. The results of performance testing, evaluations, calibrations, checks, adjustments, and maintenance of the CEMS,

4. Emission Measurements, and

5. Net megawatt-hours produced. (Rule 103)

Verification: The project owner shall submit to the District the CEMS reports as required in this condition and shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-14 Upon written request of the APCO, the project owner shall submit a written CEM report for each calendar quarter to the APCO. The report is due on the 30th day following the end of the calendar quarter and shall include the following:

1. Time intervals of report,

2. The date, time, duration and magnitude of excess emissions of NOx and/or CO, the nature and cause of the excess (if known), the corrective actions taken, and the preventive measures adopted,

3. The averaging period used for data reporting corresponding to the averaging period specified in the emission test period used to determine compliance with an emission standard,

4. The date, time and duration of each period during which the CEMS was inoperative, except for zero and span checks, and a description of the system repairs and adjustments undertaken during each period, and,

5. A negative declaration when no excess emissions occurred. (Rule 103)

Verification: The project owner shall provide CEMS emissions data to demonstrate compliance with this condition as part of the Quarterly Operation Reports **(AQ-SC7)**.

A-15 For the purposes of 40 CFR Part 60, Subpart KKKK, excess emissions shall be defined as any unit operating period in which 4-hour rolling average NOx concentration exceeds the applicable emissions limit of 15 ppmvd NOx at 15% O_2 of Part 60.4320, Table 1. The 4-hour rolling average is the arithmetic average of the average NOx concentration in ppm measured by the CEMS for a given hour (corrected to 15 percent O_2) and the three unit operating hour average NOx concentrations immediately preceding that unit operating hour. A period of monitor downtime shall be any unit operating hour in which

sufficient data are not obtained to validate the hour for either NOx or O_2. (40 CFR Part 60 Subpart KKKK)

Verification: The project owner shall submit to the CPM for review and the District for approval a CEMS protocol, as required by **AQ-37**, which includes description of the methods of compliance with the requirements of this condition. The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-16 For the purposes of 40 CFR Part 60, Subpart KKKK, the project owner shall submit reports of NOx excess emissions and monitor downtime, in accordance with 40 CFR 60.7(c) on a semi-annual basis. In addition, the project owner shall submit the results of the initial and annual source test for NOx. All semi-annual reports of excess emissions and monitor downtime shall be postmarked by the 30th day following the end of each six-month period, or by the close of business on the 60th day following the completion of the source test. (40 CFR Part 60 Subpart KKKK)

Verification: The project owner shall submit to the District and the CPM all semi-annual reports of excess emissions and monitor downtime shall be postmarked by the 30th day following the end of each six-month period, or by the close of business on the 60th day following the completion of the source test.

AQ-17 For the purposes of 40 CFR Part 60, Subpart KKKK, if the total duration of NOx excess emissions for the reporting period is less than 1 percent of the total operating time for the reporting period and CEMS downtime for the reporting period is less than 5 percent of the total operating time for the reporting period, only the summary report form in 40 CFR Part 60.7(d) shall be submitted and the excess emission report described in 40 CFR Part 60.7(c) need not be submitted unless requested by the U.S.EPA or the VCAPCD. (40 CFR Part 60 Subpart KKKK)

Verification: The project owner shall provide CEMS emissions data to demonstrate compliance with this condition as part of the Quarterly Operation Reports **(AQ-SC7)**.

AQ-18 The ammonia injection grid shall be equipped with operational ammonia flowmeter and injection pressure indicator. All data shall be reduced to hourly averages. (Rule 74.23 and 40 CFR Part 60 Subpart KKKK)

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

AQ-19 The project owner shall monitor and record exhaust gas temperature at the oxidation catalyst inlet and the selective catalytic reduction (SCR) catalyst inlet. All data shall be reduced to hourly averages. (Rule 74.23 and 40 CFR Part 60 Subpart KKKK)

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

AQ-20 The CTG shall be fired exclusively on natural gas, consisting primarily of methane and ethane, with a sulfur content no greater than 0.75 grains of

sulfur compounds (as sulfur) per 100 dry scf of natural gas. (Rules 26.2 and 64, 40 CFR Part 60 Subpart KKKK)

Verification: The project owner shall submit the quarterly fuel sulfur content values in the in the Quarterly Operation Reports **(AQ-SC7)** and make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-21 The sulfur content shall be: (i) documented in a valid purchase contract, supplier certification, tariff sheet or transportation contract or (ii) monitored weekly using ASTM Methods D4084, D5504, D6228, or Gas Processors Association Standard 2377. If the sulfur content is less than 0.75 gr/100 scf for 8 consecutive weeks, then the monitoring frequency shall be once every six (6) months. If any six (6) month monitoring shows an exceedance, weekly monitoring shall resume. (Rules 26.2 and 64 and 40 CFR Part 60 Subpart KKKK)

Verification: The project owner shall submit the quarterly fuel sulfur content values in the in the Quarterly Operation Reports **(AQ-SC7)** and make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-22 Startup is defined as the period beginning with turbine initial firing. Shutdown is defined by the period beginning with initiation of turbine shutdown sequence and ending with cessation of firing of the gas turbine engine. Unplanned load change is defined as the automatic release of power from the turbine and the subsequent restart. For an unplanned load change, the loss of power during the release must exceed forty (40) percent of the turbine rating. Startup, shutdown, and unplanned load change durations shall not exceed 60 minutes (1 hour) for a startup, 60 minutes (1 hour) for a shutdown, and 60 minutes (1 hour) for an unplanned load change, per occurrence. For failed start-ups, each restart shall begin a new exemption period. (Rules 26.2, 29, and 74.23)`

Verification: The project owner shall provide CEMS emissions data to demonstrate compliance with this condition as part of the Quarterly Operation Reports **(AQ-SC7)**.

AQ-23 The CTG, air pollution control equipment, and monitoring equipment shall be in operated in a manner consistent with good air pollution control practice for minimizing emissions at all times including during startup, shutdown, and malfunction. (40 CFR Part 60 Subpart KKKK)

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

AQ-24 The project owner shall submit to the District and CPM information correlating the NOx control system operating parameters to the associated measured NOx output. The information must be sufficient to allow the District and CPM to determine compliance with the NOx emission limits of this permit when the CEMS is not operating properly. (Rules 26.2, 29, and 74.23)

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

AQ-25 The HHV (higher heating value) and LHV (lower heating value) of the natural gas combusted shall be determined upon request using ASTM D3588, ASTM 1826, or ASTM 1945. (Rules 26.2, 29, and 74.23)

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

AQ-26 When the CTG is operating, ammonia shall be injected when the selective catalytic reduction system catalyst temperature exceeds 300 degrees F. The project owner shall monitor and record catalyst temperature during periods of startup. (Rules 26.2 and 74.23)

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

AQ-27 During startup of the CTG, emissions (in pounds = lbs) from the CTG in any one hour shall not exceed any of the following limits:

ROC = 20.30 lbs,
NOx (as NO_2) = 98.87 lbs,
PM10 = 8.75 lbs,
SOx (as SO_2) = 5.50 lbs, and
CO = 178.55 lbs

If the CTG is in startup mode during any portion of a clock hour, the facility will be subject to the aforementioned limits during that clock hour.

Compliance with the ROC, NOx, PM10, and CO emission limits shall be verified by CTG manufacturer's emission data. Compliance with the SOx emission limit shall be verified by complying with the natural gas sulfur content limit of this permit. In addition, compliance with the NOx and CO emission limits shall be verified by continuous emissions monitors (CEMS) as required by this permit. If the CEMS is not operating properly, as required below, the project owner shall provide documentation, including a certified source test, correlating the control system operating parameters to the associated measured NOx and CO emissions. (Rules 26.2, 29, and 74.23)

Verification: The project owner shall provide CEMS emissions data to demonstrate compliance with this condition as part of the Quarterly Operation Reports **(AQ-SC7)**.

AQ-28 During shutdown of the CTG, emissions (in pounds = lbs) from the CTG in any one hour shall not exceed any of the following limits:

ROC = 30.28 lbs,
NOx (as NO_2) = 22.98 lbs,
PM10 = 9.58 lbs,
SOx (as SO_2) = 5.50 lbs, and
CO = 163.48 lbs

If the CTG is in shutdown mode during any portion of a clock hour, the facility will be subject to the aforementioned limits during that clock hour.

Compliance with the ROC, NOx, PM10, and CO emission limits shall be verified by CTG manufacturer's emission data. Compliance with the SOx emission limit shall be verified by complying with the natural gas sulfur content limit of this permit. In addition, compliance with the NOx and CO emission limits shall be verified by continuous emissions monitors (CEMS) as required by this permit. If the CEMS is not operating properly, as required below, the project owner shall provide documentation, including a certified source test, correlating the control system operating parameters to the associated measured NOx and CO emissions. (Rules 26.2, 29, and 74.23)

Verification: The project owner shall provide CEMS emissions data to demonstrate compliance with this condition as part of the Quarterly Operation Reports **(AQ-SC7)**.

AQ-29 During normal operation of the CTG, emission concentrations and emission rates from the CTG, except during startup, shutdown, and/or unplanned load change, shall not exceed any of the following limits:

ROC = 6.60 pounds per hour and 2.0 ppmvd @ 15% O_2,
NOx (as NO_2) = 23.73 pounds per hour and 2.5 ppmvd @ 15% O_2,
PM10 = 10.10 pounds per hour,
SOx (as SO_2) = 5.50 pounds per hour,
CO = 23.10 pounds per hour and 4 ppmvd @ 15% O_2,
Ammonia (NH_3) = 17.53 pounds per hour and 5 ppmvd @ 15%O_2.

ROC and NOx (as NO_2) ppmvd and pounds per hour limits are expressed as a one-hour rolling average limit. All other ppmvd and pounds per hour limits are three-hour rolling averages. If the CTG is in either startup or shutdown mode during any portion of a clock hour, the CTG shall not be subject to these limits during that clock hour. Startup limits and shutdown limits are listed in the above conditions.

Compliance with the ROC, NOx, PM10, CO, and NH_3 emission limits shall be verified by initial and annual source testing as required below. Compliance with the SOx emission limit shall be verified by complying with the natural gas sulfur content limit of this permit. Compliance with the NH_3 limits shall also be verified by monitoring the ammonia injection rate as required below. In addition, compliance with the NOx and CO emission limits shall be verified by continuous emissions monitors (CEMS) as required by this permit. If the CEMS is not operating properly, as required below, the project owner shall provide documentation, including a certified source test, correlating the control system operating parameters to the associated measured NOx and CO emissions. (Rules 26.2, 29, and 74.23)

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

AQ-30 Emissions rates from the CTG during the commissioning period shall not exceed the following limits:

ROC = 164.10 pounds per hour and 3.52 tons per year,
NOx (as NO_2) = 246.30 pounds per hour and 11.70 tons per year, and
CO = 1973.00 pounds per hour and 31.74 tons per year.

The commissioning period is the period of time commencing with the initial startup of the turbine and ending after 366 hours of turbine operation, or the date the project owner notifies the District and CPM the commissioning period has ended. For purposes of this condition, the number of hours of turbine operation is defined as the total unit operating minutes during the commissioning period divided by 60.

Compliance with the ROC, NOx and CO emission limits shall be verified by CTG manufacturer's emission data. In addition, compliance with the NOx and CO emission limits shall be verified by continuous emissions monitors (CEMS) as required by this permit. If the CEMS is not operating properly, as required below, the project owner shall provide documentation, including a certified source test, correlating the control system operating parameters to the associated measured NOx and CO emissions. (Rules 26.2, 29, and 74.23)

Verification: A log of the dates, times, and cumulative unit operating hours when fuel is being combusted during the commissioning period shall be maintained by the project owner. The project owner shall submit, commencing one month from the time of gas turbine first fire, a monthly commissioning status report throughout the duration of the commissioning phase that demonstrates compliance with the requirements listed in this condition. The monthly commissioning status report shall be submitted to the CPM by the 10th of each month for the previous month, for all months with turbine commissioning activities following the turbine first fire date. The project owner shall also provide the reporting required by this condition to the District and CPM within 30 day of completing commissioning of the turbine. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-31 Annual emissions from the CTG calculated on a twelve consecutive calendar month rolling basis shall not exceed any of the following limits:

ROC = 10.84 tons per year,
NOx (as NO_2) = 32.95 tons per year,
PM10 = 10.68 tons per year,
SOx (as SO_2) = 5.91 tons per year, and
CO = 54.42 tons per year.

These tons per year limits include normal operation, startups, shutdowns, unplanned load changes, and the commissioning period.

Compliance with the NOx and CO emission limits shall be verified with the CEMS. In addition, compliance with the NOx and CO emission limits shall be verified with initial and annual source testing combined with compliance with the CTG's annual operating limit in hours per year.

Compliance with the ROC and PM10 emission limits shall be verified with initial and annual source testing combined with compliance with the CTG's annual operating limit in hours per year.

Compliance with the SOx emission limit shall be verified by complying with the natural gas sulfur content limit of this permit combined with compliance with the CTG's annual operating limit in hours per year. (Rules 26.2 and 29)

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

AQ-32 Each one-hour period in a one-hour rolling average, three-hour rolling average, or four-hour rolling average shall commence on the hour. (Rules 26.2 and 29)

Verification: none.

AQ-33 Each calendar month in a twelve consecutive calendar month rolling emissions calculation will commence at the beginning of the first day of the month. The twelve consecutive calendar month rolling emissions total to determine compliance with the annual tons per year emissions limits shall be compiled for each and every twelve consecutive calendar month rolling period. (Rules 26.2 and 29)

Verification: none.

AQ-34 The ammonia (NH_3) slip emission concentration limit shall be verified by initial and annual source testing as required below, and by the continuous recording of the ammonia injection rate to the SCR system. The correlation between the gas turbine heat input rate, the SCR system ammonia injection rate, and the corresponding ammonia (NH_3) slip emission concentration shall be determined in accordance with required initial and annual ammonia source testing. Alternatively, the project owner may utilize a continuous in-stack ammonia (NH_3) slip monitor, acceptable to the District and CPM, to monitor compliance. At least 60 days prior to using an ammonia (NH_3) slip continuous in-stack monitor, the project owner shall submit a monitoring plan to the District and CPM for review and approval. (Rules 26.2, 74.23 and 103)

Verification: Source tests demonstrating compliance with this condition shall be provided to the CPM and are due within the timeframes specified as part of this condition. At least 60 days prior to using an ammonia (NH_3) slip continuous in-stack monitor, the project owner shall submit a monitoring plan to the District and CPM for review and approval. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission

AQ-35 Within 90 days after the completion of the commissioning period for the combustion turbine, the project owner shall conduct an Initial Emissions

Source Test at the exhaust of the turbine to determine the ammonia (NH_3) emission concentration to demonstrate compliance with the ammonia concentration limit. After the initial source test, the NH_3 emissions source test shall be conducted on an annual basis.

The source test shall determine the correlation between the heat input rate of the gas turbine, SCR system ammonia injection rate, and the corresponding NH_3 emission concentration at the unit exhaust. NOx emissions at the CEM shall also be recorded during the test. The source test shall be conducted over the expected operating range of the turbine (including, but not limited to, minimum and full load modes) to establish the range of ammonia injection rates necessary to achieve NOx emission reductions while maintaining ammonia slip levels. The project owner shall repeat the source testing on an annual basis thereafter. Ongoing compliance with the ammonia emission concentration limit shall be demonstrated through calculations of corrected ammonia concentrations based upon the source test correlation and continuous records of ammonia injection rate. The project owner shall submit the source test results to the District and CPM within 45 days of conducting tests. (Rules 26.2, 29, and 74.23)

Verification: Within 90 days after the completion of the commissioning period for the combustion turbine, the project owner shall conduct an Initial Emissions Source Test to determine the ammonia (NH_3) emission concentration to demonstrate compliance with the ammonia concentration limit of 5 ppm. The project owner shall submit the source test results to the District and CPM within 45 days of conducting the tests. After the initial source test, the NH_3 emissions source test shall be conducted on an annual basis.

AQ-36 Within 90 days after the completion of the commissioning period for the combustion turbine, the project owner shall conduct an Initial Emissions Source Test at the exhaust of the turbine to demonstrate compliance with the ROC, NOx, PM10, and CO emission limits. The source test shall be conducted over the expected operating range of the turbine including, but not limited to, minimum and full load modes. This source test shall demonstrate compliance with the following short term emission limits during normal operation: ROC = ppmvd @ 15% O_2 and pounds per hour, NOx = ppmvd @ 15% O_2 and pounds per hour, PM10 = pounds per hour, and CO = ppmvd @ 15% O_2 and pounds per hour. The project owner shall submit the source test results to the District and CPM within 45 days of conducting tests.

After the initial source test, the ROC, NOx, PM10, and CO emissions source test shall be conducted on an annual basis. (Rules 26.2, 29, and 74.23)

Verification: Source tests demonstrating compliance with this condition shall be provided to the CPM and are due on an annual basis after the initial source test is conducted.

AQ-37 The District and CPM must be notified 30 days prior to any source test, and a source test plan must be submitted for approval no later than 30 days prior to testing. Unless otherwise specified in this permit or authorized in writing by the District and CPM, within 45 days after completion of a source test or

RATA performed by an independent source test contractor, a final test report shall be submitted to the District and CPM for review and approval. (Rule 102)

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

AQ-38 The following source test methods shall be used for the initial and annual compliance verification:

ROC: EPA Methods 18 or 25,
NOx: EPA Methods 7E or 20,
PM10: EPA Method 5 (front half and back half) or EPA Method 201A,
CO: EPA Methods 10 or 10B,
O_2: EPA Methods 3, 3A, or 20,
Ammonia (NH_3): BAAQMD ST-1B.

EPA approved alternative test methods as approved by the District and CPM may also be used to address the source testing requirements of this permit. (Rules 26, 29, and 74.23 and 40 CFR Part 60 Subpart KKKK)

Verification: The project owner shall submit to the CPM operating data demonstrating compliance with this condition as part of the Quarterly Operation Reports **(AQ-SC7)**.

AQ-39 An initial and annual source test and a periodic NOx and CO Relative Accuracy Test Audit (RATA) shall be conducted on the CTG and its CEM to demonstrate compliance with the NOx and CO emission standards of this permit and applicable relative accuracy requirements for the CEMS systems using District approved methods. The annual source test and the NOx and CO RATAs shall be conducted in accordance with the applicable RATA frequency requirements of 40 CFR75, Appendix B, Sections 2.3.1 and 2.3.3. The initial and annual RATA may be conducted during the initial and annual emission source tests required above and shall be conducted in accordance with a protocol complying with all the applicable requirements of an approved source test protocol. (Rule 74.23 and 103, 40 CFR Part 60 Subpart KKKK, and 40 CFR Part 75)

Verification: The project owner shall submit to the CPM for review and the District for approval the RATA certification test protocol at least 60 days prior to the RATA test and shall notify the CPM**,** and District of the RATA test date at least 45 days prior to conducting the RATA and other certification tests. The project owner will submit all RATA or source test reports to the CPM for review and the District for approval within 45 days of the completion of those tests.

AQ-40 Relative Accuracy Test Audits (RATAs) and all other required certification tests shall be performed and completed on the NOx CEMS in accordance with applicable provisions of 40 CFR Part 75 Appendix A and B and 40 CFR Part 60 Subpart KKKK; and on the CO CEMS in accordance with applicable

provisions of 40 CFR Part 60 Appendix B and F. (Rules 74.23 and 103, 40 CFR Part 60 Subpart KKKK, 40 CFR Part 60, and 40 CFR Part 75)

Verification: The project owner shall submit to the CPM for review and the District for approval the periodic RATA and source test protocols, and RATA source test reports within the timeframes specified in Conditions **AQ-39**.

AQ-41 The project owner shall maintain hourly records of NOx, CO, and NH_3 emission concentrations in ppmvd @15% oxygen. NOx and CO concentrations are measured by the CEM; NH_3 emission concentrations are determined and demonstrated through calculations of corrected ammonia concentrations based upon the source test correlation and continuous records of the ammonia injection rate as required above and below. The project owner shall maintain records of NOx and CO emissions in pounds per hour, tons per month, and tons per rolling 12 month periods. (Rules 26.2 and 29)

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

AQ-42 The project owner shall maintain records that contain the following: the occurrence and duration of any start-up, shutdown, unplanned load change or malfunction, performance testing, evaluations, calibrations, checks, adjustments, any periods during which a continuous monitoring system or monitoring device is inoperative, maintenance of any CEM system that has been installed pursuant to District Rule 103, and emission measurements. (Rules 74.23 and 103)

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

AQ-43 The APCO or an authorized representative shall be allowed to inspect, as determined to be necessary, the monitoring devices required by this permit to ensure that such devices are functioning properly. (Rule 103)

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

AQ-44 The project owner shall maintain a stationary gas turbine system operating log that includes, on a daily basis, the actual local startup and stop time, length and reason for reduced load periods, total hours of operation, amount of natural gas consumed, and duration of each start-up, each shutdown, and each unplanned load change time period. (Rules 26 and 74.23)

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

AQ-45 All records required to be maintained by this permit shall be maintained for a period of five years and shall be made readily available for District and CPM inspection upon request. (Rules 33 and 103)

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

AQ-46 For purposes of determining compliance with emission limits based on source testing, the average of three subtests shall be used. For purposes of determining compliance with emission limits based on a Continuous Emission Monitoring System (CEMS), data collected in accordance with the CEMS protocol shall be used and the averages for averaging periods specified herein shall be calculated as specified in the CEMS protocol. (Rules 26.2 and 74.23)

Verification: The project owner shall provide emissions summary data in compliance with this condition as part of the Quarterly Operation Reports **(AQ-SC7)**. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-47 For purposes of determining compliance with emission limits based on CEMS data, all CEMS calculations, averages, and aggregates shall be performed in accordance with the CEMS protocol approved in writing by the District and CPM. (Rules 26, 74.23, and 103)

Verification: The project owner shall maintain a copy of the CEMS protocol on site and provide it for inspection on request by representatives of the District, ARB, and the Energy Commission.

AQ-48 The number of annual operating hours (including startup and shutdown) for the CTG shall not exceed 2,150 hours per year. The number of startup periods occurring shall not exceed 200 per year. The number of shutdown periods occurring shall not exceed 200 per year.

The CTG shall be equipped with an operating, non-resettable, elapsed hour meter. The project owner shall maintain a log that differentiates normal operation from startup operation and shutdown operation. These hours of operation records shall be compiled into a monthly total. The monthly operating hour records shall be summed for the previous 12 months and reported to the District and CPM on an annual basis. (Rules 26 and 74.23)

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

AQ-49 Not later than 90 calendar days prior to the start of construction, the project owner shall submit to the District and CPM the final selection, design parameters and details of the selective catalytic reduction (SCR) and oxidation catalyst emission control systems for the CTG including, but not limited to, the minimum ammonia injection temperature for the SCR; the catalyst dimensions and volume, catalyst material, catalyst manufacturer, space velocity and area velocity at full load; and control efficiencies of the SCR and the oxidation catalyst CO at temperatures between 100 ºF and 1000 ºF at space velocities corresponding to 100% and 25% load. (Rules 26.2 and 74.23)

Verification: The project owner shall submit to the CPM for review and District for approval final selection, design parameters and details of the SCR and oxidation

catalyst emission control systems at least 90 days prior to the start of construction of the SCR or oxidation catalyst.

AQ-50 Continuous monitors shall be installed on SCR system prior to their initial operation to monitor or calculate, and record the ammonia solution injection rate in pounds per hour and the SCR catalyst temperature in degrees Fahrenheit for each unit operating minute. The monitors shall be installed, calibrated and maintained in accordance with a District and CPM approved protocol, which may be part of the CEMS protocol. This protocol, which shall include the calculation methodology, shall be submitted to the District and CPM for written approval at least 90 days prior to initial startup of the gas turbines with the SCR system. The monitors shall be in full operation at all times when the turbine is in operation. (Rules 26 and 103)

Verification: The project owner shall submit to the CPM for review and the District for approval a turbine operation monitoring protocol in compliance with this condition at least 90 days prior to the initial startup.

AQ-51 Except during periods when the ammonia injection system is being tuned or one or more ammonia injection systems is in manual control for compliance with applicable permit conditions, the automatic ammonia injection system serving the SCR system shall be in operation in accordance with manufacturer's specifications at all times when ammonia is being injected into the SCR system. Manufacturer specifications shall be maintained on site and made available to District and CPM personnel upon request. (Rules 26 and 74.23)

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

AQ-52 The concentration of ammonia solution used in the SCR ammonia injection system shall be less than 20% ammonia by weight. Records of ammonia solution concentration shall be maintained on site and made available to District and CPM personnel upon request. (40 CFR Part 68)

Verification: The project owner shall maintain on site and provide on request of the CPM or District the ammonia delivery records that demonstrate compliance with this condition.

AQ-53 A continuous emission monitoring system (CEMS) shall be installed and operated on the CTG and properly maintained and calibrated to measure, calculate, and record the following, in accordance with the District and CPM approved CEMS protocol:

a. Hourly average concentration of oxides of nitrogen (NOx) uncorrected and corrected to 15% oxygen, in parts per million (ppmvd), necessary to demonstrate compliance with the NOx limits of this permit;

b. Hourly average concentration of carbon monoxide (CO) uncorrected and corrected to 15% oxygen, in parts per million (ppmvd), necessary to demonstrate compliance with the CO limits of this permit;

c. Percent oxygen (O_2) in the exhaust gas averaged over each operating hour;

d. Hourly mass emissions of oxides of nitrogen (NOx) calculated as NO_2, in pounds;

e. Cumulative mass emissions of oxides of nitrogen (NOx) calculated as NO_2 in each startup and shutdown period, in pounds;

f. Daily mass emissions of oxides of nitrogen (NOx) calculated as NO_2, in pounds;

g. Calendar monthly mass emissions of oxides of nitrogen (NOx) calculated as NO_2, in pounds;

h. Rolling 1-hour average and rolling 4-hour concentration of oxides of nitrogen (NOx) corrected to 15% oxygen, in parts per million (ppmvd);

i. Rolling 1-hour average oxides of nitrogen (NOx) calculated as NO_2 emission rate, in pounds per megawatt-hour (MWh);

j. Calendar month, calendar year, and rolling 12-calendar-month period mass emissions of oxides of nitrogen (NOx), in tons;

k. Hourly mass emissions of carbon monoxide (CO), in pounds;

l. Cumulative mass emissions of carbon monoxide (CO) in each startup and shutdown period, in pounds;

m. Daily mass emissions of carbon monoxide (CO), in pounds;

n. Calendar monthly mass emissions of carbon monoxide (CO), in pounds;

o. Calendar month, calendar year, and rolling 12-calendar-month period mass emissions of carbon monoxide (CO), in tons;

p. Average concentration of oxides of nitrogen (NOx) and carbon monoxide (CO) uncorrected and corrected to 15% oxygen, in parts per million (ppmvd), averaged over each unit operating hour;

q. Average emission rate in pounds per hour of oxides of nitrogen (NOx) calculated as NO_2 and pounds per hour of carbon monoxide (CO) during each unit operating hour.

Verification: The project owner shall submit to the CPM for review and the District for approval a CEMS protocol, as required by **AQ-54**, which includes description of the methods of compliance with the requirements of this condition. The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-54 No later than 90 calendar days prior to initial startup of the CTG, the project owner shall submit a CEMS protocol to the District, for written approval that shows how the CEMS will be able to meet all of the monitoring requirements of this permit. (Rules 74.23 and 103)

Verification: The project owner shall submit to the CPM for review and the District for approval a CEMS operating protocol at least 90 days prior to the initial startup of each combustion turbine.

AQ-55 When the CEMS is not recording data and the CTG is operating, hourly NOx emissions for purposes of rolling 12-calendar-month period emission calculations shall be determined in accordance with 40 CFR 75 Subpart C. Additionally, hourly CO emissions for rolling 12-calendar-month period emission calculations shall be determined using CO emission factors to be determined from source test emission factors, recorded CEMS data, and fuel consumption data, in terms of pounds per hour of CO for the gas turbine. Emission calculations used to determine hourly emission rates shall be reviewed and approved by the District and CPM, in writing, before the hourly emission rates are incorporated into the CEMS emissions data. (Rules 26.2 and 29)

Verification: The project owner shall provide the District for approval and the CPM for review all emission calculations required by this condition, in a manner and time required by the District, and shall provide notation of when such calculations are used in place of operating CEMS data in the Quarterly Operation Reports **(AQ-SC7)**.

AQ-56 The CTG shall be equipped with continuous monitors to measure, calculate, and record unit operating days and hours and the following operational characteristics and operating parameters (Rule 74.23):

a. `Date and time;

b. Natural gas flow rate to the CTG during each unit operating minute, in standard cubic feet per hour;

c. Total heat input to the combustion turbine based on the natural gas higher heating value (HHV) during each unit operating minute, in Million British Thermal Units Per Hour (MMBTU/Hr);

d. Higher heating value (HHV) of the fuel on an hourly basis, in Million British Thermal Units Per Standard Cubic Foot (MMBTU/SCF);

e. Stack exhaust gas temperature during each unit operating minute, in degrees Fahrenheit;

f. Combustion turbine energy output during each unit operating minute in megawatts hours (MWh)

Verification: The project owner shall submit to the CPM for review and the District for approval a turbine operation monitoring protocol in compliance with this condition and within the timeframes specified in **AQ-58** and the project owner shall make the site

available for inspection of records and equipment required in this condition by representatives of the District, ARB, and the Energy Commission.

AQ-57 The values of these operational characteristics and parameters shall be reduced to hourly averages. The monitors shall be installed, calibrated, and maintained in accordance with a turbine operation monitoring protocol, which may be part of the CEMS protocol, approved by the District and CPM, which shall include any relevant calculation methodologies. The monitors shall be in full operation at all times when the combustion turbine is in operation. Calibration records for the continuous monitors shall be maintained on site and made available to the District and CPM upon request. (Rule 74.23)

Verification: The project owner shall submit to the CPM for review and the District for approval a turbine operation monitoring protocol in compliance with this condition and within the timeframes specified in **AQ-58** and the project owner shall make the site available for inspection of records and equipment required in this condition by representatives of the District, ARB, and the Energy Commission.

AQ-58 At least 90 calendar days prior to initial startup of the CTG, the project owner shall submit a CTG operating parameter monitoring protocol to the District and CPM for written approval. This may be part of the CEMS protocol.

Verification: The project owner shall submit to the CPM for review and the District for approval a turbine monitoring protocol in compliance with this condition at least 90 days prior to the initial startup of each combustion turbine.

AQ-59 Thirty (30) calendar days after the end of the commissioning period for the CTG, the project owner shall submit a written report to the District and CPM. This report shall include, a minimum, the date the commissioning period ended, the startup and shutdown periods, the emissions of NOx and CO during startup and shutdown periods, and the emissions of NOx and CO during steady state operation. This report shall also detail any CTG or emission control equipment malfunction, upset, repairs, maintenance, modifications, or replacements affecting emissions of air contaminants that occurred during the commissioning period. All of the following continuous monitoring information shall be reported and averaged over each hour of operation, except for cumulative mass emissions. (Rules 26.2 and 29):

a. Concentration of oxides of nitrogen (NOx) uncorrected and corrected to 15% oxygen, in parts per million (ppmvd);

b. Concentration of carbon monoxide (CO) uncorrected and corrected to 15% oxygen, in parts per million (ppmvd);

c. Percent oxygen (O2) in the exhaust gas;

d. Mass emissions of oxides of nitrogen (NOx) calculated as NO2, in pounds and tons;

e. Cumulative mass emissions of oxides of nitrogen (NOx) calculated as NO2 in each startup and shutdown period, in pounds and tons;

f. Cumulative mass emissions of carbon monoxide (CO) in each startup and shutdown period, in pounds and tons;

g. Mass emissions of carbon monoxide (CO), in pounds and tons;

h. Total heat input to the combustion turbine based on the fuel's higher heating value, in Million British Thermal Units Per Hour (MMBTU/Hr);

i. Higher Heating Value (HHV) of the natural gas fuel on an hourly basis, in Million British Thermal Units Per Standard Cubic Foot (MMBTU/SCF);

j. Gross electrical power output of the CTG, in megawatts hours (MWh) for each hour;

k. SCR catalyst temperature, in degrees Fahrenheit.

Verification: A log of the dates, times, and cumulative unit operating hours when fuel is being combusted during the commissioning period shall be maintained by the project owner. The project owner shall submit, commencing one month from the time of gas turbine first fire, a monthly commissioning status report throughout the duration of the commissioning phase that demonstrates compliance with the requirements listed in this condition. The monthly commissioning status report shall be submitted to the CPM by the 10th of each month for the previous month, for all months with turbine commissioning activities following the turbine first fire date. The project owner shall also provide the reporting required by this condition to the District and CPM within 30 day of completing commissioning of each turbine. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-60 Upon request of the APCO, the hourly average information required by this permit shall be submitted in writing and /or in an electronic format approved by the District and CPM. Upon request of the APCO, the minute-by-minute information required by this permit shall be submitted in an electronic format approved by the District and CPM. (Rules 26.2, 74.23, and 103)

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

AQ-61 The CTG shall comply with 40 CFR Part 60, Subpart TTTT, Standards of Performance for Greenhouse Gas Emissions From New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units. As defined by the annual hours of operation limits, and the natural gas fuel only requirements, of this permit, the CTG is subject to a CO_2 emission standard of 120 lb CO_2 per MMBTU, averaged over a 12 operating month rolling average.

To verify compliance with this condition, as required above by this permit, the project owner shall record and maintain written monthly records of the CTG natural gas consumption and the CTG net electrical sales supplied to the utility grid.

Verification: To verify compliance with this condition, as required above by this permit, the project owner shall record and maintain written monthly records of the CTG natural gas consumption and the CTG net electrical sales supplied to the utility grid and submit to the District and CPM in the Quarterly Compliance Reports (**AQ-SC7**).

779 BHP Tier 4-Final Emergency Diesel Engine

AQ-DE1 The annual hours of operation for maintenance and readiness testing of the 779 BHP Emergency Diesel Engine shall not exceed 50 hours per year. This limit does not include emergency operation when electrical grid power line service has failed. When not being operated for maintenance or readiness testing, the emergency engine shall only be used during a failure or loss of all or part of normal electrical power service to the facility.

The engine shall be equipped with an operating, non-resettable, elapsed hour meter. The project owner shall maintain a log that differentiates operation during maintenance and testing from operation during emergency use. These hours of operation records shall be compiled into a monthly total. The monthly operating hour records shall be summed for the previous 12 months and reported to the District and CPM after every calendar year by February 15. (Rule 74.9 and ATCM)

Verification: The project owner shall submit to the CPM the emergency diesel engine operating data demonstrating compliance with this condition as part of the Quarterly Operation Report **(AQ-SC7)**. The monthly operating hour records shall be summed for the previous 12 months and reported to the District and CPM after every calendar year by February 15.

AQ-DE2 Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight shall be used to fuel the Emergency Diesel Engine. (ATCM)

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

AQ-DE3 No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which are as dark or darker in shade as that designated as No. 1 on the Ringelmann Chart as published by the United States Bureau of Mines, or 20% opacity. (Rule 50)

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

AQ-DE4 The emergency engine shall be EPA-certified to the applicable emissions requirements for emergency engines of 40 CFR Part 60 Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, based on the power rating of the engine and the engine model year. The ROC, NOx, and PM10 emission limits below have been applied as BACT pursuant to Rule 26.2 and are more stringent than this condition. (Rule 26.2, ATCM, and NSPS IIII)

Verification: The project owner shall provide to the CPM for review and approval engine documentation demonstrating compliance with the condition at least 30 days prior to purchasing the engine.

AQ-DE5 ROC emissions shall not exceed the EPA Tier 4-Final Standard for NMHC of 0.14 g/bhp-hr. The project owner shall maintain documentation certifying that the emergency diesel engine meets this emission standard. (Rule 26.2)

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

AQ-DE6 NOx emissions shall not exceed shall not exceed the EPA Tier 4-Final Standard for NOx of 0.50 g/bhp-hr. The project owner shall maintain documentation certifying that the emergency diesel engine meets this emission standard. (Rule 26.2)

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

AQ-DE7 PM10 emissions from the engine shall not exceed shall not exceed the EPA Tier 4-Final Standard for PM of 0.02 g/hp-hr. The project owner shall maintain documentation certifying that the emergency diesel engine meets this emission standard. (Rules 26.2 and 51)

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

AQ-DE8 CO emissions from the engine shall not exceed the EPA Tier 4-Final Standard for CO of 2.6 g/bhp-hr. The project owner shall maintain documentation certifying that the emergency diesel engine meets this emission standard. (ATCM and NSPS IIII)

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

AQ-DE9 The exhaust stack of the Emergency Diesel Engine shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. A flapper type rain cap that is open while the engine is operating may be used. (Rule 51)

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

AQ-DE10 The Emergency Diesel Engine shall be operated and maintained in proper operating condition as recommended by the engine manufacturer or emissions control system supplier. (ATCM and NSPS IIII)

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

AQ-DE11 Project owner shall monitor the operational characteristics of the engine as recommended by the engine manufacturer or emissions control system supplier. (ATCM and NSPS IIII)

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

AQ-DE12 The existing 154 BHP emergency fire pump engine and 201 BHP emergency generator engine at the Mandalay Generating Station shall be removed prior to operation of this new 779 BHP Emergency Diesel Engine. (Rules 26.2)

Verification: The project owner shall provide to the CPM for review and approval documentation demonstrating compliance with this condition at least 30 days prior to operating the new 779 BHP emergency diesel engine.

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ACRONYMS

AAQS	Ambient Air Quality Standard
AERMOD	ARMS/EPA Regulatory Model
AFC	Application for Certification
APCD	Air Pollution Control District (VCAPCD)
AQCMM	Air Quality Construction Mitigation Manager
AQCMP	Air Quality Construction Mitigation Plan
AQMP	Air Quality Management Plan
AQIA	Air Quality Impact Assessment
ARB	California Air Resources Board
AST	Aboveground Storage Tank
ATC	Authority to Construct
ATCM	Airborne Toxic Control Measure
BACT	Best Available Control Technology
BARCT	Best Available Retrofit Technology
bhp	brake horsepower
Btu	British thermal unit
CAAQS	California Ambient Air Quality Standard
CCR	California Code of Regulations
CEC	California Energy Commission (or Energy Commission)
CEQA	California Environmental Quality Act
CEM	Continuous Emission Monitor
CEMS	Continuous Emission Monitoring System
CFR	Code of Federal Regulations
CO	Carbon Monoxide

CO_2	Carbon Dioxide
CTG	Combustion Turbine Generator
CPM	(Energy Commission) Compliance Project Manager
DAHS	Data Acquisition and Handling System
DPM	Diesel Particulate Matter
dscf	dry standard cubic foot
dscm	dry standard cubic meter
EIR	Environmental Impact Report
EPA	Environmental Protection Agency (same as U.S. EPA)
MGS	Mandalay Generating Station
ERC	Emission Reduction Credit
DOC	Final Determination Of Compliance
GHG	Greenhouse Gas
gpm	Gallons per minute
gr	Grains (1 gr $\cong$ 0.0648 grams, 7000 gr = 1 pound)
HAP	Hazardous Air Pollutant
hp	horsepower
H_2S	Hydrogen Sulfide
LAER	Lowest Achievable Emission Rate
lbs	pounds
LORS	Laws, ordinances, regulations and standards
MCR	Monthly Compliance Report
mg/m^3	milligrams per cubic meter
MMBtu	Million British thermal units
MW	Megawatts (1,000,000 Watts)
NAAQS	National Ambient Air Quality Standard

NH_3	Ammonia
NO	Nitric Oxide
NO_2	Nitrogen Dioxide
NO_3	Nitrates
NOx	Oxides of Nitrogen *or* Nitrogen Oxides
NSPS	New Source Performance Standard
NSR	New Source Review
O_2	Oxygen
O_3	Ozone
OLM	Ozone Limiting Method
P3	Puente Power Project
PDOC	Preliminary Determination Of Compliance
PM	Particulate matter
PM10	Particulate matter less than 10 microns in diameter
PM2.5	Particulate matter less than 2.5 microns in diameter
ppm	Parts per million
ppmv	Parts per million by volume
ppmvd	Parts per million by volume, dry
PSA	Preliminary Staff Assessment
PSD	Prevention of Significant Deterioration
PTO	Permit to Operate
RATA	Relative Accuracy Test Audit
ROC	Reactive Organic Compound
SCCAB	South Central Coast Air Basin
scf	Standard cubic feet
SCR	Selective Catalytic Reduction

SIP	State Implementation Plan
SO_2	Sulfur dioxide
SO_3	Sulfate
SOx	Oxides of sulfur
ULN	Ultra Low NOx
U.S. EPA	United States Environmental Protection Agency
$\mu g/m^3$	Microgram per cubic meter
VCAPCD	Ventura County Air Pollution Control District
VOC	Volatile organic compounds

APPENDIX AIR-1

AIR QUALITY APPENDIX AIR-1

Greenhouse Gas Emissions

Testimony of Jacquelyn Record and David Vidaver

SUMMARY

The Puente Power Project (P3) is a proposed addition to the state's electricity system. It would be an efficient, dispatchable, natural gas-fired simple-cycle power generation unit with fast-start capability, but would produce greenhouse gas (GHG) emissions while generating electricity for California consumers. Its addition to the system would displace other less efficient, higher GHG-emitting peaker power plant generation, and facilitate the retirement of units at the Mandalay Generating Station (MGS),the Ormond Beach Generating Station, and facilitate the integration of renewable resources. Because the project would displace less-efficient generation resources, the addition of the P3 would contribute to a reduction in California GHG emissions and the average GHG emission rate.

Electricity is produced by operation of an interconnected system of generation sources. Operation of one power plant, like P3, affects all other power plants in the interconnected system. The relative efficiency of P3 and the system build-out of renewable resources in California would result in a net cumulative reduction of GHG emissions from new and existing fossil sources of electricity. While P3 would burn natural gas for fuel and thus would produce GHG emissions that contribute cumulatively to climate change, it would have a beneficial impact on system operation and facilitate a reduction in GHG emissions in several ways:

- When dispatched,[6] P3 would displace less efficient (and thus higher GHG-emitting) generation. Because the project's GHG emissions per megawatt-hour (MWh) would be lower than those of the power plants that the project would displace, the addition of the P3 would contribute to a reduction of California and overall Western Electricity Coordinating Council system GHG[7] emissions and the average GHG emission rate.

- P3 would replace capacity and generation provided by aging, high GHG-emitting power plants, which are expected to retire in order to comply with the State Water Resource Control Board's (SWRCB) policy restricting the use of sea water for once through cooling (OTC).

- P3 would replace less efficient peaker power plant generation in the California Independent System Operator - (California ISO) designated Big Creek - Ventura Local Capacity Area (LCA), reducing the GHG emissions associated with providing

[6] The entity responsible for balancing a region's electrical load and generation will "dispatch" or call on the operation of generation facilities. The "dispatch order" is generally dictated by the facility's electricity production cost, efficiency, location or contractual obligations.

[7] Fuel-use closely correlates to the efficiency of, and carbon dioxide (CO_2) emissions from, natural gas-fired power plants. And since CO_2 emissions from fuel combustion dominate greenhouse gas (GHG) emissions from power plants, the terms CO_2 and GHG are used interchangeably in this section.

local reliability services and facilitating the retirement of units at the MGS and Ormond Beach Generating Station - aging, high GHG-emitting resources in the LCA.

- P3 would provide fast start and dispatch flexibility capabilities necessary to integrate expected additional amounts of variable renewable generation[8] to meet the state's Renewable Portfolio Standard (RPS) and GHG emission reduction targets.

INTRODUCTION – JACQUELYN RECORD

GHG emissions are not criteria pollutants[9]; they are discussed in the context of cumulative impacts. In December 2009, the U.S. Environmental Protection Agency (EPA) declared that greenhouse gases (GHGs) threaten the public health and welfare of the American people (the so-called "endangerment finding"), and this became effective on January 14, 2010.

Federal rules that became effective December 29, 2009 (40 CFR 98) require federal reporting of GHGs. Staff focuses on analyzing the ability of the project to comply with existing federal- and state-level policies and programs for GHGs. The state has demonstrated a clear willingness to address global climate change though research, adaptation,[10] and GHG inventory reductions. In that context, staff evaluates the GHG emissions from the proposed project, presents information on GHG emissions related to electricity generation, and describes the applicable GHG standards and requirements.

Generation of electricity using any fossil fuel, including natural gas, can produce greenhouse gases along with the criteria air pollutants that have been traditionally regulated under the federal and state Clean Air Acts. For fossil fuel-fired power plants, the GHG emissions include primarily CO_2, with much smaller amounts of nitrous oxide (N_2O, not NO or NO_2, which are commonly known as NOx or oxides of nitrogen), and methane (CH_4, often from unburned natural gas). Also included are sulfur hexafluoride (SF_6) from high voltage equipment, and hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) from refrigeration/chiller equipment. GHG emissions from the electricity sector are dominated by CO_2 emissions from the carbon-based fuels; other sources of GHG emissions are small and also are more likely to be easily controlled, reused or recycled, but are nevertheless documented here as some of the compounds have very high relative global warming potentials.

Global warming potential is a relative measure, compared to carbon dioxide, of a compound's residence time in the atmosphere and ability to warm the planet. Mass emissions of GHGs are converted into carbon dioxide equivalent (CO_2E) for ease of comparison.

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[8] Variable and intermittent are often used interchangeably, but variable more accurately reflects the integration issues of renewables into the California grid. Winds can slow across a wind farm or cloud cover can shade portions of a solar field, temporarily reducing unit or facility output, but not shut down the unit or facility

[9] Criteria pollutants are nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO), ozone (O_3), respirable particulate matter (PM10), and fine particulate matter (PM2.5).

[10] While working to understand and reverse global climate change, it is prudent to also adapt to potential changes in the state's climate (for example, changing rainfall patterns).

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

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

Greenhouse Gas Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law or Regulation	Description
Federal	
40 Code of Federal Regulations (CFR) Parts 51 and 52	A new stationary source that emits more than 100,000 tons per year (TPY) of greenhouse gases (GHGs) is also considered to be a major stationary source subject to Prevention of Significant Deterioration (PSD) requirements. As of June 23, 2014 the US Supreme Court has invalidated this requirement as a sole PSD permitting trigger. However, PSD still applies to GHGs if the source is otherwise subject to PSD (for another regulated New Source Review (NSR) pollutant) and the GHG emissions exceed this value. The proposed facility modifications are not subject to the PSD analysis for other NSR pollutants and are therefore not subject to GHG PSD analysis.
Title 40 CFR Part 60, Subpart TTTT (Standards of Performance for Greenhouse Gas Emissions for Electrical Generating Units)	This rule, effective October 23, 2015, establishes standards for emissions for carbon dioxide (CO_2) for newly constructed, modified, and reconstructed affected fossil fuel-fired electricity utility generating units (EGUs).
40 Code of Federal Regulations (CFR) Part 98	This rule requires mandatory reporting of GHG emissions for facilities that emit more than 25,000 metric tons of CO_2 equivalent emissions per year. This requirement is triggered by this facility.
State	
California Global Warming Solutions Act of 2006, AB 32 (Stats. 2006; Chapter 488; Health and Safety Code, sections 38500 et seq.)	This act requires the California Air Resource Board (ARB) to enact standards to reduce GHG emission to 1990 levels by 2020. Electricity production facilities are included. A cap-and-trade program became active in January 2012, with enforcement beginning in January 2013. Cap-and-trade is expected to achieve approximately 20 percent of the GHG reductions expected under Assembly Bill (AB) 32 by 2020.
California Code of Regulations, Title 17, Subchapter 10, Article 2, sections 95100 et. seq.	These ARB regulations implement mandatory GHG emissions reporting as part of the California Global Warming Solutions Act of 2006 (Stats. 2006; Chapter 488; Health and Safety Code, sections 38500 et seq.)
Title 20, California Code of Regulations, Section 2900 et seq.; CPUC Decision D0701039 in proceeding R0604009	The regulations prohibit utilities from entering into long-term contracts with any base load facility that does not meet a greenhouse gas emission standard of 0.5 metric tonnes carbon dioxide per megawatt-hour (0.5 $MTCO_2$/MWh) or 1,100 pounds carbon dioxide per megawatt-hour (1,100 lbs CO_2/MWh). The P3 would not be a base load facility and this regulation would not apply.
Local	

Applicable Law or Regulation	Description
City of Oxnard Energy Action Plan	The EAP builds upon existing energy conservation efforts and identifies energy conservation and production programs consistent with 2030 General Plan goals and policies, utility company programs, and state and federal legislation and initiatives.

GHG ANALYSIS

GHG emissions are not included in the class of pollutants traditionally called “criteria pollutants.” Since the impact of the GHG emissions from a power plant’s operation has global rather than local effects, those impacts should be assessed not only by analysis of the plant’s emissions, but also in the context of the operation of the entire electricity system of which the plant is an integrated part. Furthermore, the impact of the GHG emissions from a power plant’s operation should be analyzed in the context of applicable GHG laws and policies, especially Assembly Bill (AB) 32, California’s Global Warming Solutions Act of 2006.

GLOBAL CLIMATE CHANGE AND CALIFORNIA

Worldwide, with the exception of 1998, over the past 134-year record, the 11 warmest years all have occurred since 2002, with the two hottest years on record being 2010 and 2005 (NCDC 2014). According to “The Future Is Now: An Update on Climate Change Science Impacts and Response Options for California,” an Energy Commission document, the American West is heating up faster than other regions of the United States (CEC 2009c). The California Climate Change Center (CCCC) reports that, by the end of this century, average global surface temperatures could rise by 4.7°F to 10.5°F due to increased GHG emissions.

The accumulation of GHGs in the atmosphere regulates the earth’s temperature. Without these natural GHGs, the earth’s surface would be approximately 61°F (34°C) cooler (CalEPA 2006); however, emissions from fossil fuel combustion for activities such as electricity production and vehicular transportation have elevated the concentration of GHGs in the atmosphere above natural levels. ARB estimated that the mobile source sector accounted for approximately 37 percent of the GHG emissions generated in California from 2009 through 2012, while the electricity generating sector accounted for approximately 20 to 22 percent of the 2009 to 2012 California GHG emissions inventory, with just more than half of that on average from in-state generation sources (ARB 2014).

The Fourth U.S. Climate Action Report concluded, in assessing current trends, that CO_2 emissions increased by 20 percent from 1990 to 2004, while methane and nitrous oxide emissions decreased by 10 percent and 2 percent, respectively. The Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. It concluded that stabilization of GHGs at 450 ppm carbon dioxide equivalent concentration is required to keep the global mean warming increase below 3.8°F (2.1°C) from year 2000 base line levels (IPCC 2007a).

GHGs differ from criteria pollutants in that GHG emissions from a specific project do not cause direct adverse localized human health effects. Rather, the direct environmental effect of GHG emissions is the cumulative effect of an overall increase in global temperatures, which in turn has numerous indirect effects on the environment and humans. The impacts of climate change include potential physical, economic, and social effects. These effects could include inundation of settled areas near the coast from rises in sea level associated with melting of land-based glacial ice sheets, exposure to more frequent and powerful climate events, and changes in suitability of certain areas for agriculture, reduction in Arctic sea ice, thawing permafrost, later freezing and earlier break-up of ice on rivers and lakes, a lengthened growing season, shifts in plant and animal ranges, earlier flowering of trees, and a substantial reduction in winter snowpack (IPCC 2007b). For example, current estimates include a 70 to 90 percent reduction in snow pack in the Sierra Nevada mountain range. Current data suggests that in the next 25 years, in every season of the year, California could experience unprecedented heat, longer and more extreme heat waves, greater intensity and frequency of heat waves, and longer dry periods.

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

The state has demonstrated a clear willingness to address global climate change (GCC) through research, adaptation, and GHG emission reductions. In that context, staff evaluates the GHG emissions from the proposed project, presents information on GHG emissions related to electricity generation (see **Electricity System GHG Impacts** below), and describes the applicable GHG policies and programs.

In April 2007, the U.S. Supreme Court held that GHG emissions are pollutants within the meaning of the Clean Air Act (CAA). In reaching its decision, the Court also acknowledged that climate change results, in part, from anthropogenic causes (Massachusetts et al. v. Environmental Protection Agency 549 U.S. 497, 2007). The Supreme Court’s ruling paved the way for the regulation of GHG emissions by U.S. Environmental Protection Agency (U.S. EPA) under the CAA.

As federal rulemaking evolves, staff at this time focuses on analyzing the ability of the project to comply with existing federal- and state-level policies and programs for GHGs. As of June 23, 2014, the US Supreme Court has validated that GHG emissions should continue to be regulated, but only for those facilities that are already regulated under Prevention of Significant Deterioration (PSD) for NSR pollutants.

In 1998, the Energy Commission identified a range of strategies to prepare for an uncertain climate future, including a need to account for the environmental impacts associated with energy production, planning, and procurement (CEC 1998, p. 5). In 2003, the Energy Commission recommended that the state require reporting of GHGs,

or global climate change[11] emissions, as a condition of state licensing of new electric generating facilities (CEC 2003, IEPR p. 42). In 2006, California enacted the California Global Warming Solutions Act of 2006 (AB 32). It requires the ARB to adopt standards that will reduce 2020 statewide GHG emissions to 1990 levels.

AB 32 includes a number of specific requirements:

ARB shall prepare and approve a scoping plan for achieving the maximum technologically feasible and cost-effective reductions in greenhouse gas emissions from sources or categories of sources of greenhouse gases by 2020 (Health and Safety Code (HSC) §38561). The scoping plan, approved by the ARB on December 12, 2008, provides the outline for actions to reduce greenhouse gases in California. The approved scoping plan indicates how these emission reductions will be achieved from significant greenhouse gas sources via regulations, market mechanisms, and other actions. In early 2014, ARB completed its 5-year update to the Scoping Plan, tracking progress towards the 2020 emission goals and proposing new measures as appropriate.

The adopted Scoping Plan anticipates that four-fifths of the planned reductions will come from cost-effective programs and regulations, with the remainder provided by economy-wide cap and trade. Measures that affect the electricity sector directly include a 33 percent Renewable Portfolio Standard by 2020, alternative transportation fuels such as vehicle and ship electrification, building energy efficiency, and combined heat and power. Most of these measures have been implemented, such as Senate Bill X1-2 (Simitian, Chapter 1, Statutes of 2011), which established a firm goal requiring all retail providers to procure an amount equal to 33 percent of their electricity sales from renewable sources by 2020.[12] In January 2015, Governor Brown declared a goal of reaching 50 percent renewable energy by 2030.

Identify the statewide level of greenhouse gas emissions in 1990 to serve as the emissions limit to be achieved by 2020 (HSC §38550). In December 2007, the ARB approved the 2020 emission limit of 427 million metric tons of carbon dioxide equivalent (MMTCO2E) of greenhouse gases. In 2013, ARB used EPA's updated information to re-calculate that level to 431 million metric tons.

Adopt a regulation requiring the mandatory reporting of greenhouse gas emissions (HSC §38530). In December 2007, the ARB adopted a regulation requiring the largest electric power generation and industrial sources to report and verify their greenhouse gas emissions. The reporting regulation serves as a solid foundation to determine greenhouse gas emissions and track future changes in emission levels. Facilities that emit more than 25,000 metric tons per year are covered. That includes most emitting power plants of 5 megawatts or larger.

[11] Global climate change is the result of greenhouse gases, or air emissions with global warming potentials, affecting the global energy balance and thereby the global climate of the planet. The terms greenhouse gases (GHGs) and global climate change (GCC) gases are used interchangeably.

[12] This goal has been increased to 50 percent by 2030 (De León, Chapter 547, Statutes of 2015).

Reported emissions from individual facilities may be found on the Mandatory Reporting website, http://www.arb.ca.gov/cc/reporting/ghg-rep/reported-data/ghg-reports.htm.

Adopt a regulation that establishes a system of market-based declining annual aggregate emission limits for sources or categories of sources that emit greenhouse gas emissions, applicable from January 1, 2012, to December 31, 2020 (HSC §38562(c)). In 2011, the ARB adopted the cap-and-trade original regulation. The cap-and-trade program covers major sources of GHG emissions in the state such as refineries, power plants, industrial facilities, and transportation fuels. The cap-and-trade program includes an enforceable emissions cap that will decline over time. The state will distribute allowances, which are tradable permits, equal to the emissions allowed under the cap. Sources under the cap will need to surrender allowances and offsets equal to their emissions at the end of each compliance period.

Individual in-state generating facilities and the first deliverers of imported electricity are the point of regulation. They are responsible for measuring and reporting their GHG emissions under ARB and U.S. EPA regulations, and purchasing either carbon allowances or offsets to meet their emissions obligation. Third party verification is required. If facilities find that it is not economic to operate and to purchase sufficient compliance instruments to cover its GHG obligations, facilities must lower their annual energy output. Further information on cap-and-trade may be found at: http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm.

The first mandatory compliance period[13] with cap-and-trade requirements commenced on January 1, 2012, although enforcement was delayed until January 2013.

Convene an Environmental Justice Advisory Committee (EJAC) to advise the Board in developing the Scoping Plan and any other pertinent matter in implementing AB 32 (HSC §38591). The EJAC met between 2007 and 2010, providing comments on the proposed early action measures and the development of the scoping plan, public health issues, and issues for impacted communities and cap-and-trade. To advise the ARB on the 2013 Scoping Plan Update, ARB reconvened a new EJAC on March 21, 2013. The committee met three times in 2013 and again in April 2014.

In 2015, the ARB opened a proceeding intended to develop a 2030 target for GHG emission reductions, as well as programs necessary to reach that target.

[13] A compliance period is the time frame during which the compliance obligation is calculated. The years 2013 and 2014 are known as the first compliance period, and the years 2015 to 2017 are known as the second compliance period. The third compliance period is from 2018 to 2020. At the end of each compliance period each facility will be required to turn in compliance instruments, including allowances and a limited number of ARB offset credits, equivalent to their total GHG emissions throughout the compliance period. (http://www.arb.ca.gov/cc/capandtrade/guidance/chapter1.pdf)

It is likely that GHG reductions mandated by ARB will be non-uniform or disproportional across emitting sectors, in that most reductions will be based on cost-effectiveness (i.e., the greatest GHG reduction for the least cost). It is possible that percentage reductions in GHG emissions from the electricity sector will be higher than those from other sectors of the state's economy as decarbonizing the electricity sector may prove to be among the least-cost pathways to overall reductions.

SB 1368,[14] enacted in 2006, and regulations adopted by the Energy Commission and the California Public Utilities Commission (CPUC) pursuant to that bill, prohibits California utilities from entering into long-term commitments with any base load facilities that exceed the Emission Performance Standard (EPS) of 0.5 metric tonnes CO_2 per megawatt-hour[15] (1,100 pounds CO_2/MWh). Specifically, the SB 1368 EPS applies to new California utility-owned power plants, new investments in existing power plants, and new or renewed contracts with terms of 5 years or more, including contracts with power plants located outside of California, where the power plants are "designed or intended" to operate as base load generation.[16] If a project, in state or out of state, plans to sell electricity or capacity to California utilities, those utilities will have to demonstrate that the project meets the EPS. *Base load* units are defined as units that are expected to operate at a capacity factor higher than 60 percent. Compliance with the EPS is determined by dividing the annual average carbon dioxide emissions by the annual average net electricity production in MWh. This determination is based on capacity factors, heat rates, and corresponding emissions rates that reflect the *expected* operations of the power plant and not on full load heat rates [Chapter 11, Article 1 §2903(a)].

P3 would be required to participate in California's GHG cap-and-trade program. This cap-and-trade program is part of a broad effort by the State of California to reduce GHG emissions as required by AB 32, which is being implemented by ARB. As currently implemented, market participants, such as P3, are required to report their GHG emissions and to obtain GHG emissions allowances (and offsets) for those reported emissions by purchasing allowances from the capped market and offsets from outside the AB 32 program. As new participants enter the market and as the market cap is ratcheted down over time, GHG emission allowance and offset prices will increase encouraging innovation by market participants to reduce their GHG emissions. Thus, P3, as a GHG cap-and-trade participant, would be consistent with California's AB 32 Program.

On October 23, 2015, the U.S. EPA published in the Federal Register a New Source Performance Standard (NSPS) for GHG emissions for new electric power plants with an immediate effective date. It sets standards to limit emissions of CO_2 from new, modified and reconstructed power plants. The New Source Performance Standards Subpart

[14] Public Utilities Code § 8340 et seq.

[15] The Emission Performance Standard only applies to carbon dioxide and does not include emissions of other greenhouse gases converted to carbon dioxide equivalent.

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

TTTT – Standards of Performance for Greenhouse Gas Emissions for Electrical Generating Units (Title 40, Code of Federal Regulations, Part 60.5508) are set under the authority of the Clean Air Act section 111(b) and are applicable to new fossil fuel-fired power plants commencing construction after January 8, 2014.

According to Subpart TTTT, base load rating is defined as maximum amount of heat input that electric generating units (EGU) can combust on a steady state basis at International Organization for Standardization (ISO) conditions. For stationary combustion turbines, base load rating includes the heat input from duct burners. Each EGU is subject to the standard if it burns natural gas on a 12-month rolling basis more than 90 percent of the time and if the EGU supplies more than the design efficiency times the potential electric output as net-electric sales on a 3-year rolling average basis. Affected EGUs supplying equal to or less than the design efficiency times the potential electric output as net electric sales on a 3-year rolling average basis are considered non-base load units and are subject to a heat input limit of 120 lbs CO_2/MMBtu. Each affected 'base load EGU is subject to the gross energy output standard of 1,000 lbs of CO_2/MWh unless the Administrator approves the EGU being subject to a net energy output standard of 1,030 lbs CO_2/MWh.

P3 would be expected to supply less than the design efficiency times the potential electric output as net-electric sales on a 3-year rolling average basis and would therefore be considered a non-base load unit. The single turbine would be subject to a heat input limit of 120 lbs CO_2/MMBtu. The facility would be required to maintain fuel purchase records of the natural gas (PDOC 2016).

ELECTRICITY GREENHOUSE GAS EMISSIONS

While electricity use can be as simple as turning on a switch to operate a light or fan, the system to reliably deliver electricity is complex and ever-changing. It operates as an integrated whole to reliably and effectively meet demand, i.e., to provide electricity when and where needed at all points in time. Within the system, power plants not only generate electricity (energy), but also provide generating capacity and ancillary services needed to stabilize the system and thus reliably deliver energy over the transmission grid during stressed conditions (periods of very high demand, for example, or after the sudden failure of major power plants or transmission lines). *Capacity* is the instantaneous output of a resource, in megawatts. *Energy* is the capacity output over a unit of time, for example an hour or year. Ancillary services[17] include regulation, spinning reserve, non-spinning reserve, voltage support, and black start capability. Individual generation resources may provide one specific service, or may be operated so as to provide several. The set of ancillary services that a generator provides will depend upon the generation technology, how the power plant is operated, and constantly-changing system needs and operation.

The dispatch of a new generation resource unavoidably displaces energy from one or more existing resources. The stability of the electricity system requires that supply and demand balance at all points in time; generation from a new resource at any point in

[17] See CEC 2009d, page 95.

time must result in the curtailment of one or more existing resources at that same moment. This has implications for the change in GHG emissions resulting from dispatching new resources.

GHG EMISSIONS FROM THE PROPOSED FACILITY

The specifics of P3 project that are being evaluated, including the differences with the existing MGS Units 1 and 2, are described more fully within the **Air Quality Section**.

Project Construction of P3 and Demolition of MGS Units 1 and 2

Construction of industrial facilities such as power plants requires coordination of numerous equipment and personnel. The concentrated on-site activities result in temporary, unavoidable increases in vehicle and equipment emissions that include greenhouse gases. Construction of the P3 project would involve many milestones of construction, decommissioning and demolition of MGS Units 1 and 2 as follows: 1) P3 construction; 2) P3 commercial online date (June 2020); 3) a 3-month MGS decommissioning during initial operation of P3 (June 2021); and 4) the MGS Units 1 and 2 demolition (into late 2022) that would occur after P3 is built and operating as proposed under the applicants filing "Project Enhancement and Refinement – Demolition of Mandalay Generating Station" (PPP 2015y). The project owner provided GHG emissions estimates for each of these construction/demolition phases.

The GHG emissions estimate for project construction is presented below in **Greenhouse Gas Table 2a**. The term CO_2E represents the total GHG emissions after weighting by the appropriate global warming potential.

Greenhouse Gas Table 2a
P3 Estimated Construction Greenhouse Gas Emissions

Total for 18-month period	CO_2 Equivalent (MTCO2E) [a]
Onsite Off-Road Equipment and Onsite Vehicle	2,947
Offsite Worker Travel [b]	444
Offsite Delivery and Haul Truck Emissions [b]	178
P3 Construction total	**3,569**

Source: (AFC PPP 2015a, Appendix C-5 Table C.6-9)
Note:
[a] One metric tonne (MT) equals 1.1 short tons or 2,204.6 pounds or 1,000 kilograms.
[b] Offsite round trip distances are estimated to be approximately 60 miles to county line (page 4-2 project enhancements PPP 2015y)

The GHG emissions estimate for MGS Units 1 and 2 demolition is presented in **Greenhouse Gas Table 2b**. The term CO_2E represents the total GHG emissions after weighting by the appropriate global warming potential. The estimated GHG emissions that would occur during construction are expected to be greater than those estimated for demolition of MGS Units 1 and 2 are mostly due to the length of time for each phase.

The specific sequencing of demolition activities will provide for coordinated removal of MGS Units 1 and 2 and operation and maintenance activities related to P3 and MGS Unit 3. At the completion of the constriction and start of commercial operating of P3, the

demolition of MGS Units 1 and 2 could then commence. The exact timing of the initiation of demolition will be driven by actual dates when Units 1 and 2 are retired and the subsequent decommissioning is complete (PPP 2015y).

Greenhouse Gas Table 2b
MGS Demolition Estimated Construction
Greenhouse Gas Emissions

15-month Demolition Period – 12 months after proposed P3 is operational	CO_2 Equivalent (MTCO2E) [a]
MGS 1 and 2 Demolition Total (3 months)	143
Off-Road Equipment and Onsite Vehicles	2,383
Worker Travel[b]	352
Delivery Trucks[b]	30
Haul Trucks[b]	139
MGS Demolition total	**2,904**

Source: PPP 2015y Table 4.1-17, AFC PPP 2015a Table C.6-17
Note:
[a] One metric tonne (MT) equals 1.1 short tons or 2,204.6 pounds or 1,000 kilograms.
[b] Offsite round trip distances are estimated to be approximately 60 miles to county line (page 4-2 project enhancements PPP 2015y)

Project Operations

P3 is a proposed natural-gas fired, simple-cycle, air-cooled, 275 megawatt (MW) gross, or 262 MW net, electrical generating facility that would replace the existing Units 1 and 2 at the Mandalay Generating Station. P3 would consist of a General Electric Frame 7HA.01 combustion turbine generator. The primary source of GHG emissions would be the natural gas-fired combustion turbine. The employee and delivery traffic GHG emissions from off-site activities are negligible in comparison with the gas turbine GHG emissions.

Greenhouse Gas Table 3 shows the estimated maximum annual CO_2 and CO_2e emissions for the stationary sources and the two fugitive emissions sources (sulfur hexafluoride containing equipment leaks and methane from estimated natural gas compressor leaks). It should be noted that **Greenhouse Gas Table 3** shows values using the net MW capacity, while **Greenhouse Gas Table 4** shows values using the gross MW capacity for P3. The applicant provided gas turbine heat rate performance data on full load operation and for an expected maximum annual operating scenario that included startup and shutdowns.

Greenhouse Gas Table 3
P3 Estimated Potential Operating Greenhouse Gas Emissions

	Project Emissions (metric tonnes [a] per year)	Global Warming Potential [b]	CO_2-equivalent (MTCO2E per year)
Carbon Dioxide (CO_2)	296,003	1	296,003
Methane (CH_4)	6.05	25	151
Methane (CH_4) - Fugitive	2.19	25	55
Nitrous Oxide (N_2O)	0.6	298	179
Hexafluoride (SF_6)	0.00042	22,800	10
Maximum estimated GHG emissions – MTCO2E per year			296,398
Total MWh per year (net)			581,620
Estimated Annualized CO_2 Emissions Performance - $MTCO_2$/MWh[c]			**0.508**
Estimated Annualized GHG Emissions Performance - MTCO2E/MWh[c]			**0.509**

Sources: PPP 2015u and PPP 2015v and VCAPCD 2016.
Notes:
[a] One metric tonne (MT) equals 1.1 short tons or 2,204.6 pounds or 1,000 kilograms.
[b] The global warming potential is a measure of the chemicals' warming properties and lifetime in the atmosphere relative to CO_2.The analysis uses updated global warming potential values that became effective January 1, 2014.
[c] Based on estimated gas turbine emissions and corresponding gross energy production.

The emissions totals noted above in **Greenhouse Gas Table 3** are based on the maximum permitted air quality limits, while the actual annual emissions are likely to be well below these levels based on historical data that show that peaking power plants do not operate at capacity factors near the 24.5 percent maximum capacity factor proposed by the applicant for permitting purposes. P3 would be more efficient than MGS Units 1 and 2, with an estimated GHG emissions performance of approximately 0.509 MTCO2E/MWh compared to calculated actual annual GHG emissions performance for MGS that ranged from 0.656 to 0.724 MTCO2E/MWh from 2008 to 2013 (CEC 2014a). However, in the recent past MGS Units 1 and 2 have had very low annual capacity factors of due to their low level of efficiency. Therefore, it is likely that P3 would have actual annual GHG emissions expressed in MTCO2E greater than MGS Units 1 and 2.

P3 would be a peaking facility that would not be subject to SB1368 Emission Performance Standard of 0.500 $MTCO_2$/MWh or the new federal NSPS of 0.454 $MTCO_2$ per MWh gross. The estimated operating gross and net efficiency for the gas turbines, not including the other emissions sources at the site that are shown in the table above, is expected to just be above these values (approximately 0.509 $MTCO_2$/MWh net (**Greenhouse Gas Table 3**), and 0.484 $MTCO_2$/MWh gross (**Greenhouse Gas Table 4**) – PPP 2015u, and PPP 2015v). However, this performance is an estimate; real performance may be somewhat better or worse than this depending on the actual operating conditions.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Staff assesses the cumulative effects of GHG emissions caused by both construction and operation. As the name implies, construction impacts result from the emissions occurring during the construction of the project. The operation impacts result from the emissions of the proposed project during operation.

METHOD AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

The CEQA guidelines provide three factors for lead agencies to consider when assessing the significance of impacts for the analysis of GHG emissions impacts (CEQA Guidelines, tit. 14, §15064.4).

- The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;
- Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
- The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable, notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

Staff evaluates the emissions of the project in the context of the electricity sector as a whole and the AB 32 Scoping Plan implementation efforts for the sector, including the Cap and Trade regulation that implements the state's primary approach to reducing GHG emissions from the electricity sector. The Energy Commission's assessment approach does not include a specific numeric threshold of significance for GHG emissions; rather the assessment is completed in the context of how the project will affect the electricity sector's emissions based on its proposed role and its compliance with applicable regulations and policies.

Included in this sector-wide GHG emission analysis method is the determination of whether a project is consistent with the Avenal precedent decision, which requires a finding as a conclusion of law that any new natural gas-fired power plant certified by the Energy Commission "must:

- not increase the overall system heat rate for natural gas plants;
- not interfere with generation from existing renewables or with the integration of new renewable generation; and
- taking into account the two preceding factors, reduce system-wide GHG emissions"[18]

[18] Final Commission Decision, Avenal Energy Application for Certification (08-AFC-1) December 2009, p. 114.

CONSTRUCTION/DEMOLITION IMPACTS

Staff determined that the small GHG emission increases from construction/demolition activities would not be significant for several reasons. First, staff is recommending a condition of certification in the **Waste Management** section (**WASTE-4**) that requires construction/demolition wastes to be recycled during P3 construction and during the MGS Units 1 and 2 demolition. Second, the intermittent emissions during the construction phase are not ongoing during the life of the project. Additionally, control measures that staff recommends to address criteria pollutant emissions, such as limiting idling times and requiring, as appropriate, equipment that meets the latest criteria pollutant emissions standards, would further minimize greenhouse gas emissions to the extent feasible. The use of newer equipment will increase efficiency and reduce GHG emissions and be compatible with low-carbon fuel (e.g., bio-diesel and ethanol) mandates that are expected to be part of future ARB regulations to reduce GHG from construction vehicles and equipment.

DIRECT/INDIRECT OPERATION IMPACTS AND MITIGATION

Operational impacts of the proposed project are described in detail in a later section titled "**Project Impacts on Electricity System**" since the evaluation of these effects must be done by considering the project's role(s) in the integrated electricity system. In summary, these effects include reducing the operation and greenhouse gas emissions from the older, existing power plants; potentially displacing local electricity generation; the penetration of renewable resources; and accelerating generation retirements and replacements, including facilities currently using once-through cooling. Additionally, operation GHG emissions impacts are mitigated through compliance with the state's Cap and Trade regulation, which is designed to reduce electricity sector GHG emissions to meet AB 32 statewide GHG emissions reduction goals.

CUMULATIVE IMPACTS

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

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

CALIFORNIA ELECTRICITY AND GREENHOUSE GASES – DAVID VIDAVER

California's commitments to dramatically reduce greenhouse gas (GHG) emissions over the next four decades include moving to a high-renewable/low GHG electricity system. However, natural gas-fired power plants--and the GHG emissions associated with their output--will still be integral to the reliable operation of the electricity system at the outset of this period. In the long-run, zero- and low-carbon resources, including demand-side and storage resources, may provide a majority, if not all of the balancing services needed to integrate variable renewable resources. However, the technologies that are needed to do so are not expected to be available in sufficient quantities by the early- to mid-2020s to obviate the need for dispatchable, flexible, natural gas-fired electricity generation. Furthermore, the 2017–2020 retirements of natural gas-fired generation resources that use OTC technologies in transmission-constrained regions in Southern California will require the development of natural gas-fired generation as part of the set of resources that will maintain local reliability.

The amount of new natural gas-fired capacity needed to provide reliable service to the customers of the state's investor-owned utilities, direct access providers, and community choice aggregators, over a 10-year planning horizon is determined in the California Public Utilities Commission's (CPUC's) Long-term Procurement Planning (LTPP) proceeding. The resulting portfolio of demand- and supply-side resources satisfies the state's loading order, which mandates development of cost-effective preferred resources (zero- and low-GHG emitting resources, such as energy efficiency, demand response, and renewable generation) in support of the state's climate change policies before authorizing the development/financing of conventional fossil resources.[19] It is also consistent with Commission direction to investor-owned utilities to procure energy storage resources in support of a high variable-generation resource system.[20]

THE ROLE OF NATURAL GAS-FIRED GENERATION IN A LOW-GHG ENVIRONMENT

The need for natural gas-fired generation to reliably operate the electricity system is well established. On October 8, 2008, the Energy Commission adopted an Order Instituting Informational Proceeding (08-GHG OII-1) to solicit comments on how to assess the greenhouse gas impacts of proposed new power plants in accordance with the California Environmental Quality Act (CEQA).[21] A report prepared as a response to the

[19] The loading order is set forth in California's Energy Action Plans. Energy Action Plan I was adopted by the state's energy agencies in April/May 2003 and Energy Action Plan II in September 2005, An update to these plans was issued in February 2008.

[20] D.13-10-040 (October 17, 2013) established a procurement target of 1,325 MW in total for the state's three largest investor-owned utilities.

[21] This need for gas-fired generation to reliably operate the system was reaffirmed in the CPUC decision authorizing SCE to procure from 215 MW to 290 MW of generation from any resource in the Moonpark subarea of the Big Creek/Ventura local reliability area. D.14-03-004, See Decision Authorizing Long-Term Procurement for Local Capacity Requirements Due to Permanent Retirement of the San Onofre Nuclear Generation Stations, March 13, 2014, p. 7.

GHG OII (CEC 2009e) defines the roles that natural gas-fired power plants fulfill in an evolving high-renewables, low-GHG system (CEC 2009d, pp 93 and 94). Such new facilities serve to:

1. Provide variable generation and grid operations support;

2. Meet extreme load and system emergency requirements;

3. Meet local capacity requirements; and,

4. Provide general energy support.

Variable Generation and Grid Operations Support

California's renewable portfolio standard (RPS) requires that the state's energy service providers meet 33 percent of retail sales with renewable energy by 2020 and 50 percent of retail sales with renewable energy by 2030; meeting GHG emission-reduction targets for 2050 will likely require a far higher percentage of generation to come from renewable sources. Much of this energy will come from variable wind and solar resources to be developed in California, or on an "as generated" basis from neighboring states.

The California ISO has identified an increased need for regulation services, "load-following" generation, and multi-hour ramping as a result of the increase in these variable (intermittent-energy) renewable resources, whose output changes over the course of the day, often in a sudden and unpredictable fashion. Dispatchable capacity must provide "regulation," small changes in output over a 5-minute period at California ISO direction, requiring that the generator be equipped with automated generation control (AGC). "Load following" requires larger changes in output by the generation portfolio over a 5-minute to one-hour period. Multi-hour ramping needs require that units be dispatched, at California ISO direction if necessary, over time periods of one to nine hours and wider ranges of output in aggregate, requiring dispatchable generation that can start and ramp up and down quickly and be capable of operating at relatively low load levels if the amount of dispatchable capacity and associated energy needed from these resources is to be minimized.

Natural gas-fired power plants are currently the only type of new facility that can provide these "ancillary" services in the quantities needed now and in the near future. While dispatchable hydroelectric plants can also provide them, the potential for adding hydroelectric resources to the system is limited. Nuclear, coal, and geothermal facilities are generally more economic if operated at or near their design point (i.e., base loaded),[22] and, therefore, are not the preferred technologies for providing ancillary services. While demand-side resources and storage may ultimately provide significant quantities of these ancillary services, only pumped hydro and compressed air storage facilities are currently capable of doing so on a large scale.

[22] Issues can arise from: thermal fatigue due to cycling; difficulties starting and stopping solid or geothermal fuel supplies; significant inefficiencies at low loads or standby points used to avoid full shutdowns; and, significant capital outlays that make it necessary to operate the units as much as possible.

Historically, a large share of California's load-following and ramping needs have been provided by the natural gas-fired steam turbines built on the Pacific Coast and in the San Francisco Bay Delta during the 1960s and 1970s. Very efficient when constructed, these provided base load energy through the 1980s and 1990s. However, they were supplanted in this role by newer, more efficient, combined-cycle technologies built pursuant to the energy crisis of 2000 – 2001. While these natural gas-fired steam turbine units were modified to operate successfully as load-following and peaking generation, they are not as efficient or economic as newer technologies. Several of these facilities have retired as a result of the State Water Resource Control Board's (SWRCB) policy on the use of OTC technologies; others are expected to retire during 2017 - 2022. This represents a loss of capacity capable of operating at a very wide range of output and thus providing large quantities of flexible generation and other ancillary services.

Local Capacity Requirements

The California ISO has identified numerous local capacity areas (LCA)[23] and sub-areas in which threshold amounts of generation capacity are required to ensure reliability. Transmission constraints prevent the import of sufficient energy into these areas under high load conditions to ensure reliable service without requiring specified amounts of local capacity to be generating or available to the California ISO for immediate dispatch.

Reliable service requires that the California ISO be able to maintain service under 1-in-10-year load conditions given the sequential failure of two major components (a large power plant and a major transmission line, for example); this requirement is imposed by the North American Electric Reliability Corporation (NERC). The amount of capacity needed in each of these areas (the *local capacity requirement*, or "LCR") is determined annually by the California ISO; the LCR study process culminates in an annual *Local Capacity Technical Analysis*. The incremental needs for capacity in the Greater Bay Area, Los Angeles Basin, San Diego, and Big Creek-Ventura LCAs due to OTC retirement have been too large to be met solely with non-natural gas fired generation; the renewable development scenarios compiled by the CPUC for use in the 2014 LTPP proceeding and the California ISO's 2014 – 2015 Transmission Planning Process– indicate that only a share of the new capacity needed in the large LCAs can be expected to come from new demand-side and renewable generation resources. As a result, the CPUC has found a need for new natural gas-fired generation in the Big Creek - Ventura LCA, as evidenced by the procurement authorization issued in that proceeding.

Extreme Load and System Emergency Requirements

Sufficient capacity must exist to meet demand under very high load conditions or when generator outages reduce capacity surpluses to levels low enough to threaten reliability. Historically, generation capacity and demand response programs equal to 115 percent to 117 percent of forecasted annual peak demand have been deemed sufficient to meet these system-wide reliability requirements. Due to the amount of time it takes to assess

[23] Also referred to as *Local Reliability Areas* (LRA).

the need for, develop, permit, and construct a large power plant, capacity needs for ten years in the future are evaluated in California's planning processes.

General Energy Support

The loading order indicates the resources that the state intends to rely on to meet energy needs while reducing GHG emissions. While energy efficiency, demand response programs, renewable generation, and combined heat and power are preferred resources that are to be developed before natural gas-fired generation, they are not sufficient to meet the state's future energy demand and maintain the electric system's reliability. In addition, a significant share of the state's still-operating generation fleet is expected to shut down to comply with the SWRCB's OTC policy. Energy from natural gas-fired generation will increasingly be needed during a prolonged nuclear plant outage (for refueling, for example) or during dry years, in which hydroelectric production is reduced.

QUANTIFYING THE NEED FOR NATURAL GAS-FIRED GENERATION

Prior to the deregulation of the California electricity system during the 1990's, the Energy Commission's power plant siting process considered the need for power plant development. SB 110 (Chapter 581, Statutes of 1999) eliminated the requirement that projects licensed by the Energy Commission be in conformance with an integrated assessment of need that was conducted by the Energy Commission until that time.

The need for new generation capacity to ensure reliable service in the investor-owned utility (IOU) service territories is now determined in the CPUC's biennial LTPP proceeding.[24] This proceeding is the forum in which the state's major IOUs are authorized to finance the development of new "least-cost, best-fit" generation (on behalf of either IOU customers or all ratepayers not served by publicly-owned utilities) needed to reliably meet electricity demand.[25] This need, specified in terms of: (a) the MW of capacity needed; (b) the desired or required operating characteristics of the resource(s) to be financed; and (c) the location of proposed additions if required for local reliability, is a function of planning assumptions that reflect the state's commitment to dramatically reduce GHG emissions from the electricity sector. The MWs of capacity needed are driven by:

- Peak demand growth due to economic and demographic factors;
- Reductions in peak demand due to committed and uncommitted energy efficiency and demand response programs;
- Reserve margins (dependable capacity in excess of peak demand) needed to ensure system reliability, normally assumed to be 15 to 17 percent of peak demand, but also including any additional dispatchable capacity needed to ensure reliability given variation in the output of renewable resources (e.g., wind or solar generation);

[24] The need for new generation capacity to ensure reliable service by publicly-owned utilities (POU) is determined by the governing authorities of the individual utilities.

[25] These include costs that account for environmental impacts such as the projected emissions allowance costs (those required under the AB 32 cap-and-trade program, as well as those required for criteria pollutants).

- Capacity needed in transmission-constrained areas to ensure local reliability under extreme (1-in-10 year) weather conditions;
- Capacity needed to remedy shortfalls in system ramping and/or turndown ability, (i.e., flexible resources);
- Capacity to be provided by fossil-fired resources being developed by California-based investor-owned utilities pursuant to authorization by the CPUC in previous LTPP proceedings;
- Capacity to be provided by new renewable resources built/contracted with to meet the state's RPS; and,
- Capacity to be lost due to retirement, for example, capacity expected to cease operation as a result of the SWRCB policy regarding the use of OTC.

As noted above, this capacity need is evaluated over a ten-year planning horizon due to the length of time it takes to authorize the financing of, select, permit, and construct new power plants.

The planning assumptions adopted for use in the LTPP proceeding, and thus determinant of the amount of new capacity authorized, consider both the state's loading order for resource development, as well as the expected deployment of specific types of preferred resources, including energy efficiency, demand response, and renewable generation. In other words, in authorizing the procurement/financing of dispatchable, natural gas-fired capacity by an IOU, the CPUC assumes that cost-effective amounts of preferred resources will have been procured.

Authorization for Southern California Edison (SCE) to procure natural gas-fired generation or other least-cost (preferred) resources to replace retiring OTC capacity in the Moorpark sub-area of the Big Creek – Ventura LCA was granted in D.13-02-015 (February 13, 2013) in the CPUC's 2012 LTPP proceeding (R.12-03-014). The decision authorized SCE to procure no less than 215 MW and no more than 290 MW.

Pursuant to this authorization, SCE conducted an all-source RFO for capacity in the Moorpark subarea; on November 26, 2014 SCE submitted an application for approval of 11 contracts;[26] these included the P3 (rated for purposes of the application at 262 MW) and nine contracts for preferred resources (energy efficiency, energy storage, and renewable distributed generation) totaling 12.16 MW.

The CPUC, on May 26, 2016 approved SCE's contract with the applicant for P3.[27]

[26] A.14-11-016, *Southern California Edison Company's (U 338-E) Application for Approval of the Results of its 2013 Local Capacity Requirements Request for Offers for the Moorpark Sub-Area*, November 26, 2014.

[27] A.14-11-016, *Decision Approving, in part Results of Southern California Edison Company Local Capacity Requirements Request for Offers for Moorpark Sub-Area Pursuant to Decision 13-02-015*, Issued June 1, 2016, p. 8.

The Energy Commission does not require a CPUC-approved contract with a utility to accept or approve an Application for Certification, nor does a generation project require Energy Commission certification to participate in a utility request for offers (RFO). Requiring the sequencing of these processes would not only lengthen the time needed to bring projects on line and thus threaten system reliability, it would reduce the number of projects that could compete in utility RFOs, potentially leading to non-competitive solicitations and unnecessarily raising ratepayer costs.

Energy Commission certification of fossil generation without a contract with a utility does not result in the development of more fossil generation than needed to reliably operate the system. It is not expected that developers of new capacity, such as the developer of the P3, would bring a project to completion without a long-term contract with a utility, which would guarantee recovery of the investment of several hundred million dollars.[28] One so-called "merchant plant" has been developed since the energy crisis (2000 – 2001) without a utility contract, and the conditions that led to that merchant plant are specific to that one facility. This merchant plant, in turn, provides energy, capacity, and ancillary services that obviates the need for these from other, new gas-fired generation and contributes to reduction in GHG emissions.[29] However, if the P3 were to be built and come on line without a utility contract, it would still: (a) displace energy from higher GHG-emission facilities, and (b) not "crowd out" renewable generation and demand-side programs (i.e., requirements/targets for the procurement of preferred resources would be unaffected).

ENERGY DISPLACEMENT AND CHANGES IN GHG EMISSIONS

Any assessment of the impact of a new power plant on system-wide GHG emissions must begin with the understanding that electricity generation and demand must be in balance at all times; the energy provided by any new generation resource simultaneously displaces exactly the same amount of energy from an existing resource or resources. The GHG emissions produced by the P3 would thus not be incremental additions to system-wide emissions, but would be partially or totally offset by reductions in GHG emissions from those generation resources that are displaced, depending on the relative GHG emission rates.

At renewable penetration levels of less than 33 percent, new natural gas-fired generation such as P3 displaces less efficient natural gas-fired generation[30] in a very straightforward fashion. It is reasonable to assume that P3 would be dispatched (called upon to generate electricity) whenever it is a cheaper source of energy than an

[28] Nor would an investor-owned utility enter into such a contract without the CPUC approving the recovery of costs associated with the contract from ratepayers.

[29] The unwillingness of developers (and lenders) to commit capital to new facilities without a long-term contract follows from the size of the necessary investment and risk that it will prove uneconomic. While some plants built ten plus years ago that no longer have contracts are generating adequate revenue, many are not.

[30] At very low gas prices relative to coal prices, i.e., when electricity from natural gas is cheaper than that from coal, new gas-fired generation will displace coal-fired generation. In markets such as California, where GHG emissions allowance costs are a component of the market price, coal-fired generation is displaced even sooner due to its higher carbon content.

alternative, i.e., that it will displace a more expensive resource, if not the most expensive resource, that would otherwise be called upon to operate. The costs of dispatching a power plant are largely the costs of fuel, plus variable operations and maintenance (O&M) costs, with the former representing the lion's share of such costs (90 percent or more). It follows that P3 would be dispatched when it burns less fuel per MWh than the resource(s) it displaces, i.e., when it produces fewer GHG emissions. There are exceptions in theory, but not in practice.[31]

Holding the portfolio of generation resources constant, energy from new natural gas-fired plants displaces energy from existing natural gas-fired plants. In the longer term, the development and operation of P3 would reduce the use of less-efficient generation resources, and ultimately, to their retirement. By reducing revenue streams accruing to other natural gas-fired generators (for the provision of both energy and capacity-related services, whether through markets or under a bilateral contract), P3 would render these other facilities less profitable and riskier to operate. This follows from the fixed demand for energy and ancillary services; the developers of P3 cannot stimulate demand for energy and other products it provides, but provide a share of the energy that is needed to meet demand and the capacity needed to reliably operate the system. In doing so, P3 both discourages the use of, and allows for the retirement of less-efficient generation.

The long-run impact of the natural gas-fired fleet turnover as described here can be seen from historical changes in resources that are providing electricity in California as presented below in **Greenhouse Gas Figure 1** (data includes combined cycles and boilers only). In 2001, approximately 74,000 GWh (62.5 percent of natural gas-fired generation) in California was from pre-1980 natural gas-fired steam turbines, combusting an average of 11,268 Btu per kWh (not shown in the figure). By 2010, this share had fallen to approximately 6,000 GWh (5.4 percent); 64.1 percent of natural gas-fired generation was from new combined cycles with an average heat rate of 7,201 Btu per kWh (CEC 2011, also not shown in the figure).[32] The net change over this period was a 22 percent reduction in GHG emissions (also not shown in the figure), despite a 3.5 percent increase in generation. The post-2000 development of new combined-cycle generation has allowed for the retirement of aging natural gas-fired steam turbines along the California coast and in the San Francisco Bay Delta. Those that remain in operation have seen a dramatic reduction in their capacity factors[33] and are now used primarily as a source of dispatchable capacity.

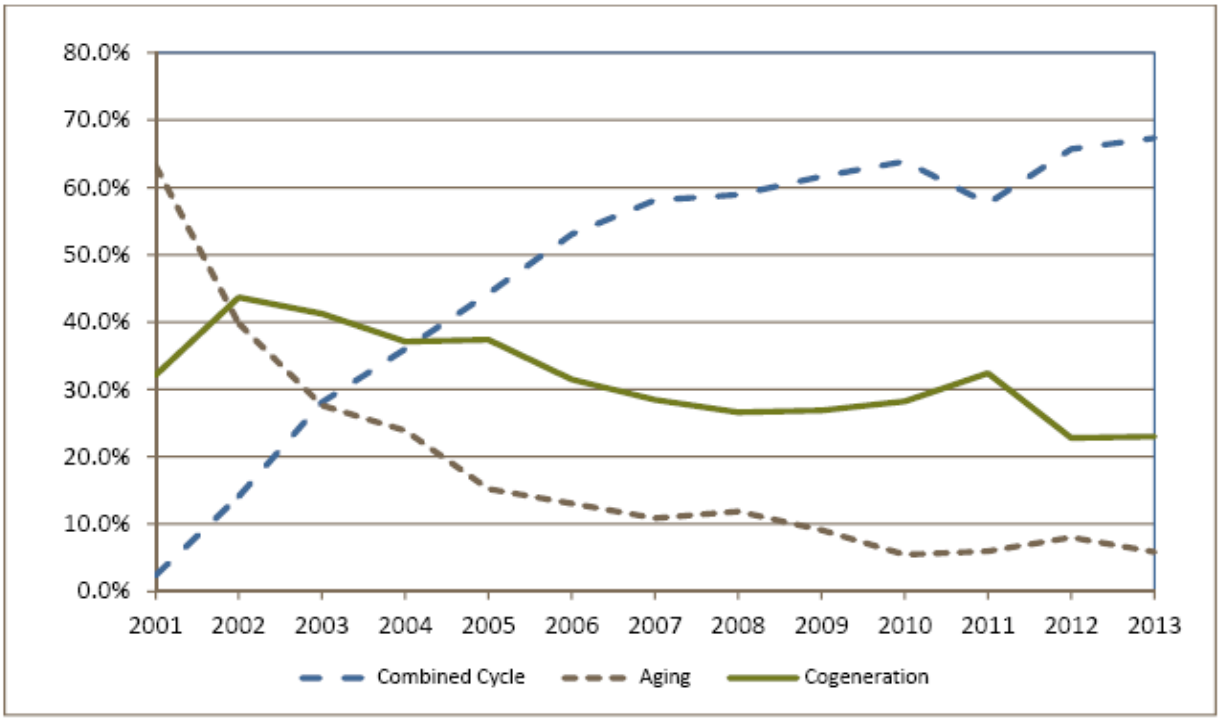
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[31] If a plant's variable O&M costs are so low as to offset the costs associated with its greater fuel combustion, a less efficient (higher GHG emission) plant may be dispatched first. There is no indication that the P3's' variable O&M costs are unusually low and that they would be dispatched before a more efficient facility. If a natural gas-fired plant's per-mmBtu fuel costs are very low, it may be less efficient (higher GHG emitting) but still be dispatched first. Natural gas costs in California, however, are higher than elsewhere in the Western Electricity Coordinating Council (WECC) and thus this scenario is unlikely to occur.

[32] The remaining 30 percent of natural gas-fired generation is largely cogeneration; slightly more than one percent is from peaking units. For a detailed discussion of the evolution of natural gas-fired generation in California since 2000, see *Thermal Efficiency of Gas-Fired Generation in California: 2014Update* (CEC-200-2013-005; September 2014)

[33] A unit's capacity factor is its output expressed as a share of potential output, the amount it would generate if it were operated continuously at 100 percent of its maximum capacity for every hour of the year.

Greenhouse Gas Figure 1
Annual California Output (GWh), Selected Natural Gas-Fired Generation Technologies, 2001 – 2013



Source: QFER CEC-1304 Power Plant Data Reporting.

Source: Thermal Efficiency of Gas-Fired Generation in California: 2014 Update, CEC-200-2014-005, September 2014 (CEC 2014b).

The dispatch of P3 would generally not result in the displacement of energy from renewable resources or large hydroelectric generation. Most renewable resources have must-take contracts with utilities, which must purchase all the energy produced by these renewable generators.[34] Even in those instances where this is not the case (e.g., where renewable generation is participating in a spot market for energy), the variable costs associated with renewable generation are far lower than those associated with P3 (e.g., fuel costs for wind, solar, other renewable generation technologies, and large hydroelectric facilities are zero or minimal); these resources can bid into spot markets for energy at prices far below the P3 and other natural gas-fired generators. P3 would not displace energy from operating (zero-GHG emission) nuclear generation facilities, as these resources have far lower variable operating costs as well.

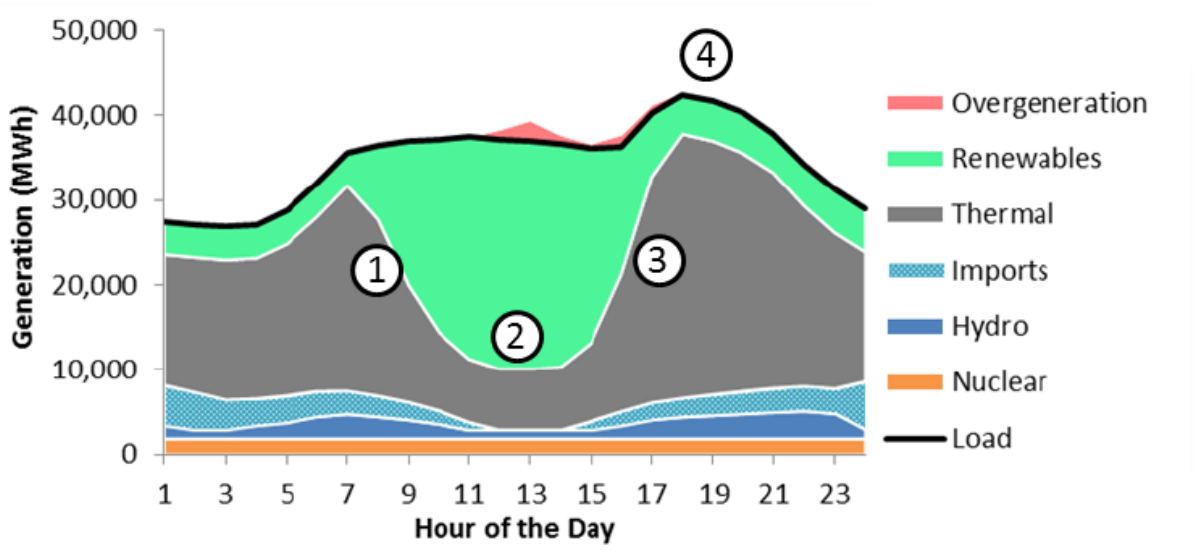
The relationship between a natural gas-fired plant's heat rate and its dispatch in the real world is in fact more complicated than that described above. While natural gas-fired plants differ in their thermal efficiency – the amount of fuel combusted, and thus GHG emissions per unit of electricity generated – very efficient natural gas plants are not necessarily dispatched before less efficient ones. While this would seem to contradict

[34] While such contracts have provisions that allow for (limited) curtailment of renewable generation during over-generation conditions, the required flexibility of the P3 is intended to minimize such occurrences.

the assertion that output from a new plant will always displace a higher emitting one, a less efficient (e.g., at full output) plant may actually combust less fuel during a duty cycle than a plant with a lower heat rate, and thus produce fewer GHG emissions. Consider a 30-MW peaking plant with a heat rate of 10,000 Btu/kWh when operated at full output that can be turned on quickly, generating approximately 15 to 30 MW in a matter of minutes. Use of this plant to meet contingency needs (e.g., demand on a hot afternoon) may result in less incremental fuel combustion than a 100-MW plant with a lower heat rate at full output if the latter requires several hours and combusts large amounts of fuel to start up, must be kept on overnight or for several hours in order to be available later the same day or the next day, and/or cannot operate at 30 MW without a marked degradation in thermal efficiency (and thus increases in GHG emissions).

At levels of renewable energy penetration in excess of 33 percent, relatively efficient fast-start, fast-ramping resources such as the P3 units, further contribute to GHG emission reductions by increasing the amount of renewable energy that can be integrated into the electricity system. This can be seen in **Greenhouse Gas Figure 2,** which depicts the estimated operating profile of the generating resources of the increasingly high-solar electricity system that California will develop over the next 15 years as the RPS increases to 50 percent in 2030. Much of the additional renewable energy will come from solar resources even if there is limited development of utility-scale solar generation, as the residential and commercial sectors take advantage of falling distributed solar costs and new residential construction post-2020 is required to be zero-net energy, (i.e., include solar panels).

Greenhouse Gas Figure 2
California Generation Typical for a Non-Summer Day ("Duck" Chart)



Source: CA ISO 2014

The large "belly" (Number 2 in the figure) represents solar generation on a typical non-summer day; this gets larger over time as more solar is added to the system. The gray area represents necessary thermal generation, which is increasingly natural gas over

time as California portfolios are divested of coal pursuant to the state's Emission Performance Standard. Note that imports are reduced to zero at midday, and hydro generation is limited to run-of-river (from hydro-generation facilities that do not have water storage, and from water that must be allowed to flow due to recreational needs, flood control, habitat preservation, etc.). A large share of midday generation must also be flexible, dispatchable natural gas as: (a) a threshold amount of thermal capacity needs to be idling (or at least readily available, not unlike a hybrid car) at mid-day at minimum output to protect against sudden component failures (major power plants and transmission lines), or drops in solar output; and, (b) a large amount of gas-fired generation will be needed 4 to 8 hours later when solar energy is unavailable, and thus must be on line and generating at minimum output at mid-day.

Greenhouse Gas Figure 2 illustrates a case of over-generation; in which renewable output at mid-day and necessary gas-fired generation jointly result in too much energy being produced. There are several ways to deal with over-generation. In theory, the surplus energy can be exported to neighboring states. But much of the over-generation expected in California will occur during the low-demand months of February to April, when similar surpluses exist in the Pacific Northwest due to the snow melt and the resulting increase in hydroelectric generation in the Columbia River basin. Under these conditions, export potential is likely to be limited and export prices would be near zero.

A long-term solution for over-generation is expected to be the development of cost-effective, multi-hour storage, allowing the surplus to be stored until it can be used in evening hours. In the interim, however, over-generation can be dealt with by curtailing renewable generation or reducing the amount of gas-fired generation that is needed during midday and early afternoon hours. The latter is facilitated by developing gas-fired resources such as the Frame 7HA that can cycle on and off at least twice a day.[35]

While P3 is less thermally efficient than the natural gas-fired combined cycles built in California during the past decade, P3 could be off line until moments before being needed in the late afternoon and early evening, and reach full load within 90 minutes of start-up. It would thus provide 262 MW of capacity towards flexible resource adequacy requirements.

THE ROLE OF THE P3 IN LOCAL GENERATION DISPLACEMENT

As new generation capacity in the California ISO-defined Big Creek - Ventura LCA, P3 would provide local reliability services. The California ISO has determined in their *2016 Local Capacity Technical Analysis* that the Big Creek – Ventura area needs 2,398 MW of local capacity.[36] P3 facility would contribute up to 262-net-MW of local capacity to these areas.

[35] For a detailed discussion of the operational needs for a high-solar portfolio, see Energy and Environmental Economics, *Investigating a Higher Renewables Standard in California*, January 2014, available at http://www.ethree.com/public_projects/renewables_portfolio_standard.php.

[36] CA ISO, *2016 Local Capacity Technical Analysis: Final Report and Study Results*, April 30, 2015, –p. 90.

As stated above, local reliability requires generation by resources located within an LCA; the LCR reflects the amount of capacity that must be generating, synchronous to the grid or available within a few minutes under 1-in-10 load conditions.[37] At lower levels of demand, a (smaller) share of local capacity must be generating, synchronous to the grid or available on a moment's notice as long as reliability cannot be maintained solely with imported energy in the event of major component failures.

The number of hours per year that P3 would be required to operate in support of local reliability needs and the amount of energy that would be generated as a result are not known; California ISO operating procedures that result in the dispatch of specific generating units for local reliability purposes are confidential. When called upon to generate for such purposes, however, it is reasonable to expect that P3 would be the least-cost and thus lowest-emitting natural gas-fired resource able to do so, given the duty cycle that was necessary to provide local reliability. It would thus displace less-efficient resources, reducing GHG emissions resulting from relying on the latter. Should it be dispatched for local reliability needs ahead of units that were thermally more efficient, it would likely be because, able to operate at lower levels of output, it would allow for the integration of a greater amount of renewable energy.

Greenhouse Gas Table 4 illustrates the thermal efficiency of existing peakers in the Big Creek - Ventura LCA and provides the expected thermal efficiency for P3 for comparison. It should be noted that **Greenhouse Gas Table 3** shows values using the net MW capacity, while **Greenhouse Gas Table 4** shows P3 values using the gross MW capacity, with existing peaking facility performance based on actual data (net).

Greenhouse Gas Table 4
Heat Rates, Capacity Factors, and GHG Emissions Performance for Big Creek - Ventura Peakers, 2013 - 2014

Plant Name	Capacity (MW)	Output (MWh)	Heat Rate [a] (Btu/kWh)	Capacity Factor	GHG Performance [b] ($MTCO_2$/MWh)
Ellwood	56.7	2,149	13,907	0.2%	0.735
Mandalay 1	217.6	162,229	11,525	4.3%	0.609
Mandalay 2	217.6	199,850	11,572	5.2%	0.612
Mandalay 3	138.1	2,692	34,383	0.1%	1.818
McGrath	49	50,566	10,592	5.9%	0.560
Total	**679**	**417,486**	**11,594**	**3.5%**	**0.613**
P3 Estimates	275[c]		9,149		0.484

Source: Energy Commission QFER Database (CEC 2015a); PPP 2015a
Notes:
a. Based on the Higher Heating Value or HHV of the fuel. The heat rate includes start-up and low load operations fuel use.
b. GHG performance conversion factor for natural gas of 0.529 $MTCO_2$/MW/10,000 Btu/KWh was used to derive these performance values.
c. Gross output, MWh at ISO conditions

[37] 1-in-10 load conditions refer to a level of demand that is expected to be observed on only one day in ten years.

While the net heat rate for the P3 gas turbine will be to a small degree dependent on its operating profile,[38] it has an expected heat rate that is clearly lower than all of the existing peaking resources in the LCA.

COMPLIANCE WITH LORS – JACQUELYN RECORD

Federal

P3 would not be subject to PSD permitting requirements of 40 CFR Parts 51 and 52 (please see the **Air Quality** section's Compliance with LORS subsection), including not being subject to a GHG emissions BACT analysis. The New Source Performance Standards Subpart TTTT-Standards of Performance for Greenhouse Gas Emissions for Electrical Generating Units (Title 40, Code of Federal Regulations, Part 60.5508) are set under the authority of the Clean Air Act section 111(b) and are applicable to new fossil fuel-fired power plants commencing construction after January 8, 2014. P3 would be expected to supply less than the design efficiency times the potential electric output as net-electric sales on a 3 year rolling average basis and would therefore be considered a non-base load unit. The single turbine would be subject to a heat input limit of 120 lbs CO_2/MMBtu.

VCAPCD determined "the new P3 CTG is expected to operate with an annual capacity factor of approximately 25%. With a full load net nominal output of approximately 262 MW, the P3 unit would supply a maximum of approximately 25% x 8760 hrs/year x 262 MW/Hr = 573,780 MW per year to a utility power distribution system. Since this output is less than the allowable level of 1,108,173 MW per year, the P3 CTG would be a non-base load unit under the final Carbon Pollution Standards (CPS) and would be subject to the Best System of Emission Reduction (BSER) established for that subcategory" (VCAPCD 2016).

This turbine is limited to burning natural gas resulting in a consistent emission rate of 120 lb CO_2/MMBTU or less per section 60.5520(d)(1).

State

The P3 would be required to participate in California's GHG cap-and-trade program, which became active in January 2012, with enforcement beginning in January 2013. This cap-and-trade program is part of a broad effort by the State of California to reduce GHG emissions as required by AB 32, which is being implemented by ARB. As currently implemented, market participants such as P3 are required to report their GHG emissions and to obtain GHG emissions allowances (and offsets) for those reported emissions by purchasing allowances from the capped market and offsets from outside the AB 32 program. P3, as a GHG cap-and-trade participant, would be consistent with California's landmark AB 32 Program, which is coordinated with the region-wide

[38] The approximate 5 percent difference in full load versus the expected operating profile net heat rates, shown in **Greenhouse Gas Table 3**, are likely the effect of startups and shutdown, variations in ambient temperatures, and off design point operations on optimum full load heat rate.

Western Climate Initiative program to reduce California's GHG emissions to 40 percent below 1990 levels by 2030. ARB staff continues to develop and implement regulations to refine key elements of the GHG reduction measures to improve their linkage with other GHG reduction programs. The project may have to provide additional reports and GHG reductions, depending on the future regulations expected from ARB.

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

P3, due to having a permitted capacity factor of below 60 percent, is not subject to the California's Emission Performance Standard of 1,100 lbs of carbon dioxide per net MWh.

Local

The VCAPCD does not currently have any approved GHG emissions regulations that would apply to the project. However, the city of Oxnard has published an Energy Action Plan, but has not yet approved any of the GHG emissions reduction measures as city ordinances. Therefore, currently there are no applicable local LORS for GHG emissions/climate change.

AVENAL PRECEDENT DECISION

The Energy Commission established a precedent decision in the Final Commission Decision for the Avenal Energy Project, finding as a conclusion of law that any new natural gas-fired power plant certified by the Energy Commission "must:

- not increase the overall system heat rate for natural gas plants;
- not interfere with generation from existing renewables or with the integration of new renewable generation; and
- take into account the two preceding factors, reduce system-wide GHG emissions".[39]

The Energy Commission in the recent Final Decision for the Huntington Beach Energy Project[40] noted that the Avenal decision has been augmented by two recent developments. The first is the adoption of CEQA guidelines for the analysis of GHG emissions impacts (CEQA Guidelines, tit. 14, §15064.4). The second development is the enactment of the AB 32 Cap-and-Trade system that implements the state's approach to reducing GHG emissions from the electricity sector. Staff is continuing to analyze this project against that precedent, while also taking into consideration the CEQA guidelines.

The average heat rate for the Western Electricity Coordinating Council (WECC) is presented in **Greenhouse Gas Table 5**, as is the California specific data. These values

[39] Final Commission Decision, Avenal Energy Application for Certification (08-AFC-1) December 2009, p. 114.

[40] Final Commission Decision, Huntington Beach Energy Project (12-AFC-02) November 2014, pp. 4.1-6,7.

are an average across all natural gas-fired units that operated in that year. It is interesting to note that the average heat rates in-state versus the average of those across the greater WECC are not that different; this is due to the large contribution of California generation to total WECC generation, and generally similar energy resources and technology types throughout the WECC.

Greenhouse Gas Table 5
Weighted Average Heat Rate for Operating Natural Gas-Fired Plants[1] in the WECC and California 2010-2013

Year	Average WECC Heat Rate [2] (MMBtu/MWh)	Average CA Heat Rate [3] (MMBtu/MWh)
2010	7,712	7,634
2011	7,954	7,881
2012	7,841	7,806
2013	7,771	7,666
2014	7,761	7,750

[1] Excludes cogeneration facilities
[2] Compiled from EIA-923 data.
[3] Compiled from Quarterly Fuel and Energy Reports submitted to the California Energy Commission.

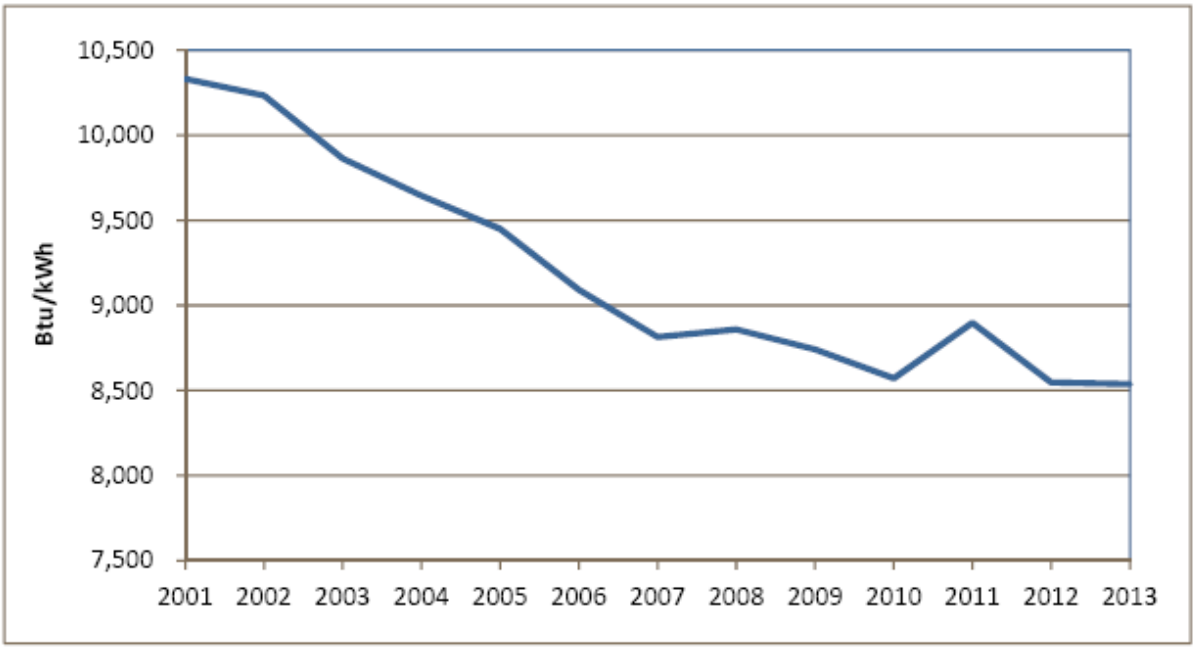
Overall, the average heat rate for natural gas units has been declining for years, as shown in **Greenhouse Gas Figure 3** below. The improvement is the result of the deployment of modern combustion turbine units, as shown in **Greenhouse Gas Figure 1**. The relationship is exemplified by the slight drop in combined-cycle generation in 2011and a corresponding uptick in average heat rate shown in **Greenhouse Gas Figure 3**. Note also in **Greenhouse Gas Figure 1** that by 2013, combined-cycle output is almost 70 percent of the total natural gas energy production. In other words, the average heat rates shown in Greenhouse Gas Table 5 are dominated by deployment of modern combined-cycle facilities.

While simple-cycle peaking facilities have higher direct heat rates than combined-cycle facilities and the system average heat rates shown in **Greenhouse Gas Table 5**, peaking facilities must be evaluated based on their function, and ultimately, their overall effect on the system. In this case, the P3 is proposed to operate no more than a 31 percent annual capacity factor. Historically, most peakers have operated at about three to five percent capacity factor, while the listing of local Big Creek - Ventura peaking units in **Greenhouse Gas Table 4** shows an average capacity factor of 3.5 percent. If P3 displaced the local peaking units it would have a much better heat rate than the displaced peaking units. P3 would also facilitate the decommissioning of MSG Units 1 and 2.

However, as California moves to a high renewable/low-GHG system, efficient resources like the P3 may operate more than a traditional, less flexible peaker unit. As noted above, the addition of the P3 would not interfere with generation from existing renewable facilities or with the integration of new renewable generation. The flexible nature of the P3 would serve to facilitate the integration of additional variable renewable resources.

The P3 would reduce system-wide GHG emissions as discussed above; this development is consistent with the goals and policies of AB 32 and thus is consistent with the Avenal precedent decision.

Greenhouse Gas Figure 3
Average Heat Rates for Gas Fired Electric Generation Serving California



Source: QFER CEC-1304 Power Plant Data Reporting.

Source: Thermal Efficiency of Gas-Fired Generation in California: 2014 Update, CEC-200-2014-005, September 2014 (CEC 2014b).

CONCLUSIONS

The project would lead to a net reduction in GHG emissions across the electricity system that provides energy and capacity to California. Thus, staff concludes that the project would result in a cumulative overall reduction in GHG emissions from the state's power plants, would not worsen current conditions, and would thus not result in impacts that are cumulatively significant. In addition, it would provide flexible, dispatchable, and fast-ramping power which is expected to be necessary to integrate variable-energy renewable generation on the scale projected in the CPUC and California ISO long-term planning processes.

Staff notes that mandatory reporting of GHG emissions per Federal Government and Air Resources Board greenhouse gas regulations would occur, and these reports would enable these agencies to gather the information needed to regulate the P3 project in trading markets, such as those required by regulations implementing the California Global Warming Solutions Act of 2006 (AB 32).

Staff does not conclude that the GHG emission increases from construction activities would be significant for several reasons. First, construction emissions would be temporary and intermittent, and not continue during the life of the project. Additionally, the control measures or best practices that staff recommends such as limiting idling

times and requiring, as appropriate, equipment that meets the latest emissions standards, would further minimize greenhouse gas emissions. Staff reasoned that the use of newer equipment would increase efficiency and reduce GHG emissions and be compatible with low-carbon fuel (e.g., bio-diesel and ethanol) mandates that will likely be part of the California Air Resources Board (ARB) regulations to reduce GHG from construction vehicles and equipment. For all these reasons, staff concludes that the emission of greenhouse gases during construction would not be significant.

P3 is proposed as a simple-cycle peaker power plant, and is proposing to use one of the most efficient simple-cycle gas turbines known to be available. P3 would have an expected annual capacity factor well below 60 percent; therefore P3 is not subject to the Greenhouse Gases Emission Performance Standard (Title 20, California Code of Regulations, section 2900 et seq.). Finally, because this expected potential annual average electric sales rate is less than the 41 percent design efficiency, the new P3 CTG would be a non-base load unit under federal requirements. As a non-base load unit this turbine is limited to burning natural gas resulting in a consistent emission rate of 120 lb CO_2/MMBTU or less per section 60.5520(d)(1).

Staff has reached the following conclusions about the P3 based on CEQA guidelines:

- P3 would have less than significant GHG emissions impacts because:
    - P3 is proposed as a high-efficiency, simple-cycle power plant that would be more efficient and have lower GHG emissions than other simple-cycle power plants currently operating in the Big Creek – Ventura LCA;
    - P3 would facilitate the integration of renewable energy resources, which would lower the statewide GHG emissions from the electricity sector; and
    - P3, as shown in **Greenhouse Gas Table 3,** is more efficient and therefore would have lower GHG emissions than Mandalay Units 1 and 2, whose retirement it would facilitate. P3 has an estimated GHG emissions performance of 0.509 MTCO2E/MWh (net, from **Greenhouse Gas Table 3**) versus the actual calculated annual GHG emissions performance for MGS Units 1 and 2 that ranged from 0.656 MTCO2E/MWh to 0.724 MTCO2E/MWh from 2008 to 2013 (net, see text below the table).

- P3 would have less than significant impacts by complying with applicable regulations and plans related to the reduction of GHG emissions as follows:
    - The P3 would be subject to compliance with the AB 32 Cap and Trade regulation that implements the state's regulatory plan for reducing GHG emissions from the electricity sector; and
    - The P3 would recycle construction and demolition wastes to reduce GHG emissions from construction and demolition activities (as required by WASTE-4) to comply with state policy and local Climate Action Plans.

Additionally, staff has also determined that P3 would be consistent with all three main conditions in the precedent decision regarding GHG emissions established by the Avenal Energy Project's Final Energy Commission Decision (not increase the overall system heat rate for natural gas plants, not interfere with generation from existing or

new renewable facilities, and ensure a reduction of system-wide GHG emissions). The P3 is not a base-load gas-fired power plant, it is proposed as a peaker project; consistent with the Avenal decision, it will displace higher heat rate peakers, thereby reducing the overall system heat rate. The system-wide heat rate analysis of this peaker power plant factors in the role and purpose of a peaker power plant; including the small effect on the system-wide heat rate average it would have given its expected low operating capacity factor, and the system-wide reduction in GHG emissions and fossil fueled power plant use it would help to achieve given its role in integrating non-dispatchable renewable energy resources.

PROPOSED CONDITIONS OF CERTIFICATION – JACQUELYN RECORD

No conditions of certification related to the greenhouse gas emissions from facility operation or construction are proposed. However, the formulation of state and local GHG emissions reduction policies and goals are fairly recent, and ongoing. Staff reviewed the currently known construction emissions related policies and goals that could be appropriate to this project and that also may provide a substantial reduction in GHG emissions. Staff's review determined that to conform to policies and goals related to recycling and waste reduction, it is reasonable to require that the construction and demolition wastes be recycled to the extent feasible. The requirement to appropriately recycle construction and demolition wastes is included in the **Waste Management** section (Condition of Certification **WASTE-4**), so no additional conditions related to construction GHG emissions reductions are proposed.

During facility operation, the facility owner would participate in California's GHG cap-and-trade program. The facility owner is required to report GHG emissions and to obtain GHG emissions allowances (and offsets) for those reported emissions by purchasing allowances from the capped market and offsets from outside the AB 32 program. Similarly, the proposed facility modifications would be subject to federal mandatory reporting of GHG emissions. The facility owner may have to provide additional reports and GHG reductions, depending on the future regulations formulated by the U.S. EPA or the ARB.

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ACRONYMS

AB	Assembly Bill
AGC	Automated Generation Control
ARB	Air Resource Board
CAA	Clean Air Act
CAISO	California Independent System Operator
CCCC	California Climate Change Center
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH_4	Methane
CO_2	Carbon Dioxide
CO2E	Carbon Dioxide Equivalent
CPUC	California Public Utilities Commission
EIR	Environmental Impact Report
EJAC	Environmental Justice Advisory Committee
EPA	Environmental Protection Agency
EPS	Emission Performance Standard
GCC	Global Climate Change
GHG	Greenhouse Gas
GWP	Global Warming Potential
HFC	Hydrofluorocarbons
HSC	Health and Safety Code
IEPR	Integrated Energy Policy Report
IOU	investor-owned utility
IPCC	Intergovernmental Panel on Climate Change
LCA	Local Capacity Area
LTPP	Long-term Procurement Planning
MT	Metric Tonnes
MTCO2E	Metric Tons of CO2-Equivalent
MW	Megawatt
NERC	American Electric Reliability Council
N_2O	Nitrous Oxide
NO	Nitric Oxide
OTC	Once-Through Cooling
PFC	Perflurocarbons
PPP or P3	Puente Power Project

PSD	Prevention of Significant Deterioration
PTA	Petition to Amend
PTR	Petition to Remove
RPS	Renewable Portfolio Standard
SB	Senate Bill
SF_6	Sulfur Hexafluoride
SONGS	San Onofre Nuclear Generating Station
SWRCB	State Water Resource Control Board
VCAPCD	Ventura County Air Pollution Control District
WECC	Western Electricity Coordinating Council
U.S. EPA	United States Environmental Protection Agency

APPENDIX AIR-2

AIR QUALITY APPENDIX AIR-2

Additional Support of District Response to the Sierra Club Comment

Testimony of Wenjun Qian

The American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) is the computer model approved by the U.S. Environmental Protection Agency (U.S. EPA) and recommended to be used for State Implementation Plan (SIP) revisions for existing sources and for New Source Review (NSR) and Prevention of Significant Deterioration (PSD) programs (40 CFR Part 51 Appendix W), for proposed new sources, including power plants. While many of its input parameters are specified in the model's code, other parameters are allowed to be varied by the user. These are called "beta options". The beta options can be used as long as they are approved by the regulatory agency reviewing the analysis for permitting purposes.

It is known that AERMOD, with default options, overestimates impacts during low wind speed, stable conditions (e.g. Qian and Venkatram 2011). One of the major reasons for the overestimation is due to underestimation of the surface friction velocity (u*) by the meteorological data preprocessor for AERMOD (AERMET). Research (Qian and Venkatram, 2011) found that with an empirical adjustment of the u* estimation (Adjusted u*), the overestimation of impacts during low wind speed conditions can be reduced.

The Adjusted u* option has been evaluated by researchers and U.S. EPA for a variety of sources and conditions (Paine and Connors 2013, Paine et al 2015, U.S. EPA 2015a, etc.). Both Energy Commission staff and District staff agree that there is significant evidence that the use of Adjusted u* option improves AERMOD performance.

On July 14, 2015, U.S. EPA administrator signed a proposal to revise the Guideline on Air Quality Models (40 CFR Part 51 Appendix W). In the proposed rulemaking package, U.S. EPA proposed the Adjusted u* option, along with other beta options, as future default options of AERMOD. However, the proposed revisions to Appendix W have not been formally approved yet. U.S EPA's December 2015 memorandum (U.S. EPA 2015b) clarified that the regulatory application of any of the beta options need formal approval as an alternative model. This is applicable for compliance demonstrations in the PSD context and State Implementation Plan development for NAAQS criteria pollutants as well as the specific use for SO_2 designations and consent decree modeling.

U.S. EPA has approved the use of the Adjusted u* option for two projects: the Donlin Gold Limited Liability Company (DGLLC) mine facility in southwestern Alaska (Region 10) and the Schiller Station energy generating facility in New Hampshire (Region 1). For Donlin mine facility, the primary concern regarding ambient pollutant impacts is expected to be associated with low-level fugitive emissions of particulate matter from sources with low release heights. U.S. EPA demonstrated improvement in model performance with the Adjusted u* option for similar near-ground releases (Idaho Falls and Oak Ridge [U.S. EPA 2015a]). U.S. EPA concluded that both Idaho Falls and Oak Ridge studies are relevant to application of Adjusted u* option for the Donlin mine facility, therefore approved the use of Adjusted u* option for the Donlin mine facility. Staff determines that it is appropriate to use the Adjusted u* option to evaluate the

impacts of P3 during construction/demolition periods, during which the emission sources would be low-level and mostly fugitive particulate matter with near-source impacts.

The Schiller Station has three tall stacks (ranging from about 68-70 meters [m]) located near complex terrain (beginning at around 16 km from the source), where worst case concentrations are likely to occur under low wind, stable conditions. This modeling domain is similar to P3's modeling domain (complex terrain beginning at around 9 km from the P3). In the Model Clearinghouse concurrence request memorandum, Region 1 highlighted the evaluation databases (Lovett [U.S. EPA 2015a] and Mercer County [Paine et al 2015]) that directly represent the Schiller Station and surrounding terrain circumstances. Both the Lovett and Mercer County data evaluations demonstrate a significant improvement in model performance, while still conservatively overestimating project impacts, with the use of the Adjusted u* option for a facility with tall stacks located near complex terrain, particularly during low wind, stable conditions. U.S. EPA approved the use of Adjusted u* option for the Schiller Station. The proposed turbine at P3 would also have a tall stack (about 57.3 m [188 feet]) and buoyant plume (exhaust temperature of 900°F). Staff noticed that the worst case 1-hour impact of the P3 turbine would be on the complex terrain beyond 9 km north of the project site during low wind, stable conditions. Staff determines that it is appropriate to evaluate the impacts of the proposed turbine at P3 using the Adjusted u* option.

Nonetheless, the District performed an independent analysis comparing the impacts of P3 from AERMOD using Adjusted u* option and default options (without using Adjusted u*). For more details and modeling results, see Appendix G, titled *Ambient Air Quality Analysis and Risk Management Review* Tables 5-13 and 5-15, of the PDOC. The PDOC shows that AERMOD predicts lower impacts with Adjusted u* option than default options, which agrees with other dataset evaluations. However, even with the potentially overestimated impacts using default options of AERMOD (without using Adjusted u* option), conclusions of the project impacts would not change, which are: emissions of CO, NOx, SOx, and PM2.5 from P3 are not expected to cause an exceedance of any state or federal ambient air quality standard. The PM10 background concentrations already exceeded the state ambient air quality standards. The PM10 emissions of P3 would contribute to the existing violations of the PM10 ambient air quality standards.

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ALTERNATIVES

Jeanine Hinde and David Vidaver[1]

SUMMARY CONCLUSIONS

This analysis evaluates a reasonable range of potentially feasible alternatives to the proposed Puente Power Project (P3 or proposed project). These are staff's encapsulated conclusions for the alternatives that are fully analyzed and compared to the P3, including the No-Project Alternative:

- The **No-Project Alternative** would avoid several environmental impacts relating to project operations; however, it would not meet any of the proposed P3's basic objectives. The No-Project Alternative would cause significant impacts on biological resources (special-status birds nesting near the site) and visual resources; these two impacts would remain significant and unavoidable if the Mandalay Generating Station (MGS) Units 1 and 2 remained nonoperational on the site.
- The **Del Norte/Fifth Street Off-site Alternative** would avoid the significant impact relating to the risk of inundation by tsunami, but use of this site would result in significant and unavoidable impacts on aircraft and pilot safety. Assumptions for this alternative do not include demolishing and removing MGS Units 1 and 2, which is considered a beneficial visual improvement of the proposed P3.
- The **Ormond Beach Area Off-site Alternative** would avoid three potentially significant effects of the proposed P3 without causing other significant effects. Impacts that would be avoided include filling of jurisdictional wetlands, risk of inundation by tsunami, and temporary water quality impacts during demolition. Assumptions for this alternative do not include removing MGS Units 1 and 2, which is considered a benefit of the proposed P3.
- **Conceptual Site Reconfigurations 1 and 2** would avoid filling 2.03 acres of Coastal Commission jurisdictional wetlands without causing other significant environmental impacts. It is assumed that MGS Units 1 and 2 would be demolished and removed from the site.

The two off-site alternatives could potentially satisfy half of the project's basic objectives. However, their feasibility is uncertain given that the applicant does not have site control over either site. The two site reconfigurations would likely attain all of the project's basic objectives and may be feasible alternatives to the P3. This alternatives analysis considers many factors in comparing the project alternatives to the proposed P3. The Ormond Beach Area Off-site Alternative and the two Conceptual Site Reconfigurations would avoid some of the P3's significant impacts; if avoiding these impacts is the critical factor, this off-site alternative and either of the site reconfigurations would be environmentally superior to the proposed P3.

[1] **Alternatives Appendix 1** lists staff contributors to the technical and environmental analyses of project alternatives.

INTRODUCTION

Energy Commission staff reviewed the alternatives analysis contained in the P3 Application for Certification (AFC) submitted by NRG Oxnard Energy Center LLC (NRG or applicant) (NRG 2015a). In addition to the No-Project Alternative, the AFC discusses alternative generation technologies and configurations, alternative emission control technologies, and alternative water sources and wastewater handling systems.

The AFC concludes that the alternatives were either infeasible or would not attain most of the basic objectives of the proposed project. In identifying, evaluating, and rejecting alternatives, NRG's analysis does not discuss whether any of the P3's significant effects can be avoided or substantially lessened by an alternative. Although the AFC does not consider off-site alternatives, NRG subsequently submitted an *Alternatives Site Summary* with information comparing several alternative sites suggested for analysis by city of Oxnard (City) planning staff (NRG 2015b).

The information provided in the AFC served as a starting point for the evaluation of alternatives prepared by staff. Alternatives analyzed in this staff assessment include the off-site alternatives recommended for study by the City. Alternatives evaluated in this staff assessment are either eliminated from further consideration or compared to the proposed P3 to determine their potential to avoid or substantially lessen the significant effects of the proposed project while feasibly attaining most of the project's basic objectives.

Review and investigation of information on potential alternatives led staff to fully analyze two off-site alternatives. Staff also evaluated two conceptual site reconfiguration alternatives to avoid filling the Coastal Commission jurisdictional wetlands on the P3 site. And staff evaluated the No-Project Alternative.

Staff's analysis assesses the characteristics of preferred resources (energy efficiency, demand response, central station and distributed renewable generation, and energy storage) that determine and limit their ability to provide the same set of services as the project applicant's proposed natural gas-fired combustion turbine.

The following subsections provide an overview of the alternatives carried forward for full analysis, starting with the No-Project Alternative.

NO-PROJECT ALTERNATIVE

No development plan or proposal for the project site has been put forth that would allow an analysis comparing the impacts of such a plan to those of the proposed project. To comply with the OTC Policy (i.e., once-through cooling of power plants), the MGS Units 1 and 2 would cease to operate on or before December 31, 2020. For the No-Project Alternative, staff considers shut down and closure of the existing MGS Units 1 and 2 the most likely result if the proposed P3 does not go forward. Demolition and removal of Units 1 and 2 is not included in the assumptions and analysis for the No-Project Alternative. The MGS Unit 3 would continue operating. Several environmental impacts

relating to the P3's project operations would be avoided under the No-Project Alternative.

Visual resources impacts would be greater under the No-Project Alternative, and staff concludes the impacts at key observation points (KOPs) 2 and 3 at the MGS site could remain significant and unavoidable. Due to the potential for the existing MGS Units 1 and 2 to present nesting and perching opportunities for raptors and other predatory birds, staff concludes that the No-Project Alternative could cause significant and unavoidable impacts on special-status birds nesting near the site. These impacts could outweigh the project's operational impacts that would be avoided if the proposed P3 does not go forward.

The significant and unavoidable impacts on special-status birds and visual resources would persist as long as the MGS Units 1 and 2 remained nonoperational on the project site. Staff concludes that the No-Project Alternative is *not* considered environmentally superior to the proposed P3. Except for the visual impact at KOP 3, all of the proposed project's impacts relating to project construction and operation can be reduced to less than significant with implementation of recommended conditions of certification.

Under the No-Project Alternative, staff is unable to predict what other action might be taken that could potentially convert all or a portion of the MGS site to another use. In the absence of the Energy Commission's approval of a license to construct and operate a power plant at the site, another proposed future use of the MGS power plant site would be subject to review and approval of a coastal development permit by the City of Oxnard. It is assumed that future land use agreements or property division or sale would include removal of some of the existing power block structures and infrastructure. In this circumstance, significant impacts on biological resources and visual resources from the existing MGS Unit 1 and 2 power block structures remaining on the site would not persist, and the No-Project Alternative could be considered environmentally superior to the P3. However, the No-Project Alternative would not attain any of the project's basic objectives.

DEL NORTE/FIFTH STREET OFF-SITE ALTERNATIVE

Staff evaluated the potential environmental impacts of developing a project similar to the proposed P3, including ancillary buildings and other structures, and two retention basins to collect storm water and process wastewater on an approximately 12.5-acre site in an industrial area in the eastern portion of Oxnard at the intersection of S. Del Norte Boulevard and E. Fifth Street (State Highway 34). The site is located approximately 7 miles east of the coastline and 5 miles inland from the Coastal Zone boundary. The site is designated by the City of Oxnard General Plan (General Plan) as Heavy Industrial (IH), which allows industrial uses that are primarily outdoor and/or within specialized structures that may involve transportation, storage, or use of hazardous materials.

The Del Norte/Fifth Street Off-site Alternative would avoid one potentially significant geological resources impact of the proposed P3. Under this off-site alternative, no impact would occur from the risk of inundation by tsunami resulting from an earthquake

or local submarine landslide. Under the proposed P3, this impact is reduced to less than significant with conditions of certification imposed.

The Del Norte/Fifth Street Off-site Alternative would cause a significant impact relating to Traffic and Transportation due to the potential for thermal plumes to impact aircraft and pilot safety; no feasible mitigation measures are identified to reduce the severity of this impact, which would remain significant and unavoidable. This alternative would also cause a significant impact relating to Transmission Line Safety and Nuisance if the Federal Aviation Administration determined that the transmission structures presented an obstruction hazard that could impact aviation safety; the impact conclusion is potentially significant and unavoidable. Because of these two impacts, the Del Norte/Fifth Street Off-site Alternative is not considered environmentally superior to the proposed P3. This off-site alternative could potentially satisfy four of the applicant's eight project objectives.

Similar to staff's assumptions for the No-Project Alternative, under the Del Norte/Fifth Street Off-site Alternative, the existing MGS Units 1 and 2 would remain nonoperational on the MGS power plant site and would not necessarily be demolished and removed from the site following their decommissioning. In the absence of a license from the Energy Commission for a power plant, proposed future uses of the MGS power plant site would be subject to review and approval of a coastal development permit by the City of Oxnard.

ORMOND BEACH AREA OFF-SITE ALTERNATIVE

Staff evaluated the potential environmental impacts of developing a project similar to the proposed P3 on an approximately 14.5-acre undeveloped industrial site in the southeast portion of Oxnard at the intersection of Arcturus Avenue and E. McWane Boulevard. The site is located approximately one-half mile inland from Ormond Beach and just east of (outside) the Coastal Zone boundary. The existing Ormond Beach Generating Station (OBGS) is located approximately three-quarter mile south of this alternative site. The site is designated by the General Plan as Light Industrial (ILT), which allows manufacturing uses where the principal activity occurs within a building, but also permits outdoor assembly, fabrication, public services, and storage.

The Ormond Beach Area Off-site Alternative would avoid three significant effects of the proposed P3 without causing other significant effects. Impacts that would be avoided include filling of jurisdictional wetlands and other waters, risk of inundation by tsunami, and temporary water quality impacts during demolition. Regarding potential Visual Resources impacts, staff concludes that the potential to substantially degrade the existing visual character or quality of the site and its surroundings is less than or similar to P3, and the impact conclusion is potentially significant. Mitigation measures could feasibly reduce visual impacts at this alternative site to less than significant. If avoiding the three significant effects of the proposed P3 is the critical factor, then the Ormond Beach Area Off-site Alternative would be environmentally superior to the proposed P3.

The existing OBGS is the most visually prominent industrial-type structure in the area surrounding this alternative site (along with the high-voltage transmission lines that

parallel Edison Drive). Even though this off-site alternative is set back from the beach, construction and operation of a power plant similar to P3 at a site relatively near the OBGS site could incrementally increase its visual impact. If the OBGS was retired by the end 2020 (to comply with the OTC Policy) and subsequently removed from the site adjacent to Ormond Beach, the impact of visually prominent industrial-type facilities in the vicinity of this off-site alternative would be incrementally reduced. This off-site alternative could potentially satisfy five of the applicant's eight project objectives.

Similar to staff's assumptions for the No-Project Alternative, under the Ormond Beach Area Off-site Alternative, the existing MGS Units 1 and 2 would remain nonoperational on the MGS power plant site and would not necessarily be demolished and removed from the site. In the absence of a license from the Energy Commission for a power plant, proposed future uses of the MGS power plant site would be subject to review and approval of a coastal development permit by the City of Oxnard.

CONCEPTUAL SITE RECONFIGURATION ALTERNATIVES

Conceptual Site Reconfigurations 1 and 2 would avoid filling 2.03 acres of Coastal Commission jurisdictional wetlands. If avoiding the on-site wetlands is a critical factor, then either of the site reconfigurations would be environmentally superior to the proposed P3. No other environmental impacts would be reduced or avoided by reconfiguring the power plant facilities on the P3 site. Reconfiguring the site would not create any new environmental impacts compared to the proposed P3. Either site reconfiguration would likely attain the basic project objectives.

CEQA REQUIREMENTS

As lead agency for the proposed P3, the Energy Commission is required to consider and discuss alternatives to the proposed project. The guiding principles for the selection of alternatives for analysis in an environmental impact report (EIR) are provided by the California Environmental Quality Act Guidelines (CEQA Guidelines) (Cal. Code Regs., tit. 14, § 15000 et seq.). Section 15126.6 of the CEQA Guidelines indicates that the alternatives analysis must:

- describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project;
- evaluate the comparative merits of the alternatives;
- consider alternatives that would avoid or substantially lessen any significant environmental impacts of the proposed project, including alternatives that would be more costly or would otherwise impede the project's objectives; and
- describe the rationale for selecting alternatives to be discussed and identify alternatives that were initially considered but then rejected from further evaluation.

These regulations also apply to the document used as a substitute for an EIR in a certified state regulatory program (Cal. Code Regs., tit. 14, §§ 15251 and 15252).

The range of potentially feasible alternatives selected for analysis is governed by the "rule of reason," requiring evaluation of only those alternatives "necessary to permit a reasoned choice" (Cal. Code Regs., tit. 14, § 15126.6, subd. (f)). In addressing feasibility of alternatives, factors that may be taken into account include site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (Cal. Code Regs., tit. 14, § 15126.6, subd. (f)(1)). Under the "rule of reason," an EIR "need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative" (Cal. Code Regs., tit. 14, § 15126.6, subd. (f)(3)).

Alternatives may be eliminated from detailed consideration by the lead agency if they fail to meet most of the basic project objectives, are infeasible, or could not avoid any significant environmental effects (Cal. Code Regs., tit. 14, § 15126.6, subd. (c)).

The CEQA Guidelines require analysis of a "no-project alternative" in comparison to the proposed project. "The 'no project' analysis shall discuss the existing conditions…at the time environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services" (Cal. Code Regs., tit. 14, § 15126.6, subd. (e)(2)). If the environmentally superior alternative is the "no project" alternative, the EIR shall identify an environmentally superior alternative among the other alternatives.

PROJECT OBJECTIVES AND ALTERNATIVES SCREENING

The applicant's AFC identifies several basic objectives for the development of P3 (NRG 2015a):

- Fulfill the applicant's obligations under its 20-year Resource Adequacy Purchase Agreement (RAPA) with Southern California Edison (SCE) requiring development of 262 megawatts (MWs) nominal output of newer, more flexible and efficient natural gas generation at the site of the existing Mandalay Generating Station (MGS);
- Provide an efficient, reliable, and predictable power supply by using a simple-cycle, natural gas-fired combustion turbine to replace the existing once-through cooled (OTC) generation;
- Support the local capacity requirements of the California Independent System Operator (CAISO) Big Creek/Ventura local capacity reliability area;
- Develop a 262-MW nominal net 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;
- Be designed, permitted, built, and commissioned by June 1, 2020;

- Minimize environmental impacts and development costs by developing on an existing brownfield site and reusing existing transmission, water, wastewater and natural gas infrastructure;
- Site the project on property that has an industrial land use designation with consistent zoning; and
- Safely produce electricity without creating significant environmental impacts.

The applicant's project objectives specify providing 262 MWs of natural gas-fired generation with rapid-start and fast-ramping capability. As discussed below under the subsection, "Preferred Resources," the California Public Utilities Commission (CPUC) issues decisions authorizing procurement by the state's investor-owned utilities (IOUs) based on the need for new resources. In the two most recent CPUC decisions in the Long-term Procurement Planning (LTPP) proceeding, levels of procurement are specified for preferred resources, energy storage, and natural gas-fired generation; these procurement authorizations are intended to ensure local reliability following the potential retirement of OTC generation facilities in the Southern California portion of the CAISO balancing authority area and permanent closure of the San Onofre Nuclear Generating Station (SONGS). (Future CPUC decisions will adjust the procurement levels according to changes in need and in response to the IOUs' progress developing preferred resources.)

Preferred resources cannot fully substitute for generating capacity in providing reliability services, the closest to an exception being event-triggered demand response. However, staff has not perfunctorily eliminated preferred resources from the alternatives analysis due to that limitation. Rather, staff discusses preferred resources and assesses the characteristics that determine and limit their ability to provide the same set of services as the project applicant's proposed natural gas-fired combustion turbine. The preferred resources analysis is important to include given that the proposed project's generating capacity is not the only way to meet local capacity needs.

The applicant's narrowly drawn project objectives address developing a specific project on the existing MGS site. These objectives would rule out any off-site alternatives with the potential to support local capacity requirements in the Big Creek/Ventura local reliability area. CEQA requires an analysis of potentially feasible alternatives, a set that cannot be unduly limited by project objectives that can only be satisfied by the proposed project. Therefore, staff's alternatives analysis broadly interprets the applicant's project objectives to foster a robust analysis of potential alternatives to the applicant's proposed project. This approach is consistent with CEQA's purpose for an alternatives analysis.

PREFERRED RESOURCES

California is rapidly and fundamentally changing its electricity supply system. These changes are driven in large part by the state's programs addressing global climate change and the policy imperative of reducing greenhouse gas (GHG) emissions. California's transition to a low-carbon economy requires dramatically reducing GHG

emissions from the electricity sector, in turn allowing other economic sectors (e.g., transportation, industry) to transition from fossil fuels to electricity as a primary fuel source. The state's Renewable Portfolio Standard (RPS) requires that providers of retail electricity procure a minimum share of energy (measured as a percentage of retail sales) from renewable sources. The RPS was established in 2002 under Senate Bill (SB) 1078 and accelerated in 2006 under SB 107. SB 2 (2011) expanded RPS to require all electricity retailers in the state to increase procurement from eligible renewable energy resources to 33 percent of total procurement by the end of 2020. SB 350 (2015) increased the RPS target to 50 percent by 2030.

State energy policies include a *loading order* for electric generation that prefers and maximizes cost-effective, reliable, and feasible energy efficiency, demand response programs and measures, and renewable generation to supplant the need for new fossil fuel-fired generation. Consistent with state law, the CPUC has held that all utility procurement must be consistent with this loading order (Pub. Utilities Code, § 454.5, subd. (b)(9)(C)).

At the same time, state policies and other factors have dramatically increased the near-term need for new resources with which to reliably meet—or reduce—the state's demand for reliably delivered electricity. The state's policy objective to phase out OTC power plants is forcing the rapid retirement of a substantial amount of dispatchable generation in coastal areas and its replacement with new generation, transmission, and demand-side resources to preserve system reliability. In addition, concerns about nuclear safety led to the permanent closure in 2012 of SONGS, a large nuclear baseload facility that was a critical source of Southern California electricity generation.

All of these factors are considered by the state's energy agencies when determining the need for new, natural gas-fired electric generation capacity (NGFG) over the 10-year horizon for which the state energy agencies undertake procurement planning. The Energy Commission considers them in developing its 10-year electricity demand forecast. The CAISO considers them as part of its efforts to maintain electric system reliability. In tandem with CAISO planning, the CPUC conducts its biennial LTPP proceeding, in which it determines how much new natural gas-fired generation is required and should be financed by the state's IOUs. In estimating the need for new "least-cost best-fit" generation capacity or specifically for new NGFG over the 10-year planning horizon, the CPUC first assumes the timely development of all cost-effective preferred resources.

RELIABLE OPERATION OF THE ELECTRICITY SYSTEM

State law emphasizes the importance of maintaining the reliability of the electric grid, including sections of the Public Utilities Code addressing the importance of maintaining reliable electric services to the state's citizens and businesses (Pub. Utilities Code, §§ 330, subds. (g) and (h), 334, 345.5, subd. (b), and 362, subd. (a)).

In May 2010, the State Water Resources Control Board (State Water Board) adopted a statewide *Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling* (OTC Policy). The OTC Policy established compliance dates for

existing power plant operators to implement measures to greatly reduce impingement mortality and entrainment of marine life. Compliance with the OTC Policy is expected to lead to the retirement of a large amount of OTC capacity in transmission-constrained areas of Southern California. As a result, the CPUC devoted a share of its 2012 LTPP proceeding (Rulemaking 12-03-014) to the potential need for new NGFG to meet minimum local capacity requirements for the CAISO-controlled grid. Such generation, if necessary, would be required to meet reliability standards imposed by the North American Electric Reliability Corporation (NERC) and the Western Electricity Coordinating Council (WECC), which are based on load circumstances that are projected to occur once in 10 years and the assumption that two major component failures (generator, transmission line) occur in a transmission-constrained area nearly simultaneously.

In February 2013, as part of its 2012 LTPP proceeding, the CPUC issued a decision (D.13-02-015, referred to as the Track 1 decision) authorizing procurement to meet the local capacity requirement (LCR) in the West Los Angeles (LA) sub-area of the LA Basin local reliability area (West LA Basin) and the Moorpark sub-area of the Big Creek/Ventura local reliability area. The authorization for new capacity was done to maintain reliability after the expected retirement of approximately 7,000 MWs of OTC capacity in the LA Basin and Big Creek/Ventura local areas, including 1,946 MWs at the MGS and the Ormond Beach Generating Station.

The State Water Board set December 31, 2020, as the compliance date for the OTC generators in the LA Basin and Big Creek/Ventura local reliability areas. SCE was authorized to procure between 215 and 290 MWs of electric generation capacity to meet LCR in the Moorpark sub-area of the Big Creek/Ventura local reliability area by 2021 (CPUC 2013a). Authorized capacity was largely based on CAISO testimony in the form of a local capacity technical study that accounts for the NERC and WECC standards stated above. The CPUC established the maximum procurement level after accounting for the likelihood of preferred resource development and/or transmission upgrades that reduce or meet LCR needs.

To satisfy authorized procurement under the Track 1 decision, SCE issued a Request for Offers (RFO) seeking new LCR resources in the Moorpark sub-area, including energy efficiency, renewable distributed generation, energy storage, and NGFG. SCE entered into contracts with NRG to meet a share of the Moorpark sub-area LCR, including a contract for new NGFG generation at the MGS site (the proposed P3). On November 26, 2014, SCE submitted an application (A.14-11-016) to the CPUC seeking approval of its contracts entered into as a result of the LCR RFO for the Moorpark sub-area, including cost recovery for those contracts (CPUC 2014a). The list of offers selected by SCE includes a 20-year contract with NRG for the Puente Power Project, a new, 262-MW simple-cycle peaking facility.

On May 26, 2016, the CPUC issued a decision approving SCE’s 20-year contract with NRG for 262 MWs of natural gas-fired generation at the P3 site (D.16-05-050). In its Decision, the CPUC states that the results of the contract process regarding the

selection of the Puente Power Project contract are reasonable and consistent with CPUC's Track 1 decision (CPUC 2016).

PREFERRED RESOURCES AS SUBSTITUTES FOR DISPATCHABLE NATURAL GAS-FIRED GENERATION

The state's loading order established by the energy agencies in 2003 calls for meeting new electricity needs first with efficiency and demand response (jointly, demand-side management), followed by renewable energy and distributed generation, and only then with efficient, utility-scale natural gas-fired generation (Energy Commission and CPUC 2003). Section 454.5 (b)(9)(C) of the California Public Utilities Code addresses requirements for an electrical corporation's proposed procurement plan, including the requirement to "first meet its unmet resource needs through all available energy efficiency and demand reduction resources that are cost effective, reliable, and feasible." In recent years, energy storage has achieved preferred resource status due to its ability to: (a) absorb over-generation that may occur at high levels of solar penetration, and (b) obviate the need for natural gas-fired generation and associated capacity to meet ramping needs during evening hours when solar resource output declines to zero.

Preferred resources can provide many of the services provided by dispatchable, natural gas-fired generation. However, where preferred resources cannot ensure reliability, because they lack necessary operating characteristics or are not available in sufficient quantities, the CPUC has found that the procurement of clean, efficient natural gas-fired generation is necessary and consistent with the state's loading order.

The ability of individual resources (energy efficiency, demand response, utility-scale and distributed renewable generation, and storage) to provide specific services is discussed below.

Energy Efficiency

Energy efficiency entails using less energy to provide the same service such as by improving the efficiency of air conditioners or the insulation characteristics of building shells, thereby using less energy to keep the temperature of a building at desired levels. Continued development and implementation of comprehensive, long-term energy efficiency strategies and programs remains the top priority to offset increased energy demand. The CPUC oversees the IOU energy efficiency programs, and many of the state's municipal utilities administer similar programs. These efforts are funded by ratepayers and include a wide variety of initiatives aiming to move energy-efficient equipment and effective energy management practices into the marketplace at increasing scale. The CPUC issues decisions approving the electric energy efficiency budgets for the state's IOUs. For 2013–2015, the approved electricity energy efficiency budgets for the state's three major IOUs total $2.388B (D.12-11-015 and D.14-10-046) (CPUC 2012, 2014b).

SB 350 (2015) reflects California's commitments to energy efficiency in its efforts to transition to a low-carbon economy. The bill requires the Energy Commission establish

annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings by January 1, 2030, and requires the CPUC (for the IOUs) and local publicly owned utilities to establish efficiency targets consistent with this goal.

Energy efficiency programs can serve as substitutes for dispatchable, natural gas-fired generation such as the proposed P3 and partially meet the project objectives by: (1) reducing the amount of electricity that needs to be generated when targeted at consumption during high-demand (i.e., peak) hours and when flexible generation is needed most, and (2) reducing the need for natural gas-fired generation capacity, as well as the need for load-serving entities to procure such capacity to satisfy CAISO- and CPUC-imposed system-wide resource adequacy requirements. In targeting consumption in the Moorpark sub-area of the Big Creek/Ventura local reliability area, energy efficiency programs can reduce the need for conventional generation in the area and the need to procure such capacity to satisfy resource adequacy requirements for local, flexible resources. Energy efficiency programs are thus capable of reducing the need for energy and capacity-related reliability services that conventional natural gas-fired generation such as the proposed P3 would provide.

Demand Response

Demand response (DR) programs provide an economic incentive for end users to modify energy use, whether through direct payments to reduce consumption when requested to do so (i.e., event-triggered DR programs) or rate structures that encourage reducing energy use during hours in which generation is expensive and/or system reliability is threatened. On September 25, 2013, the CPUC authorized a new rulemaking (R.13-09-011), in part, to facilitate the participation of aggregated loads in ancillary service markets, allowing them to directly compete with generation resources in providing reliability services and to satisfy resource adequacy requirements imposed on load-serving entities in exchange for a stream of revenue (CPUC 2013b).

DR continues to play an important role in meeting California's capacity planning, including requirements for peak summer demand. These programs are operated by the state utilities; DR programs operated by the IOUs meet roughly 5 percent of total CAISO-system resource adequacy capacity requirements (CAISO 2015a).

DR has attributes that can partially meet some of the P3's project objectives by: (1) contributing to or reducing the need for capacity-related reliability services, including an array of ancillary services (regulation and spinning reserves), and (2) reducing the need for flexible generation if called upon during hours in which ramping needs are highest. When such programs reduce loads in the Moorpark sub-area, they reduce local capacity requirements. DR programs can facilitate the integration of renewable resources by meeting incremental needs for regulation and reserves and reducing ramping needs. Unlike natural gas-fired generation, DR can absorb load during periods of renewable over-generation (e.g., when there is surplus solar generation at midday).

Utility Scale and Distributed Renewable Generation

In 2010, Governor Brown's Clean Energy Jobs Plan established a target of 12,000 MWs of renewable distributed generation (DG) by 2020. As of October 31, 2015, 7,200 MWs of renewable DG was operational, contracts with another 900 MWs had been approved, and 2,200 MWs of capacity was anticipated from various incentive programs (the Renewable Auction Mechanism, Renewable Feed-in Tariff, Bioenergy Feed-in Tariff, and utility photovoltaic programs) (Energy Commission 2015).

Utility-scale and distributed renewable generation can substitute for natural gas-fired generation as sources of energy. To the extent that these resources can be relied on to produce energy during periods of peak demand, they are also substitute sources of local capacity, thereby reducing the need to build and operate natural gas-fired generation and contributing to meeting LCR in the Moorpark sub-area.

Energy Storage

As California increasingly relies on wind and solar resources to meet its energy needs and environmental goals, other energy resources are increasingly called upon to "balance the system." Expected changes in wind and solar output over the course of a day and random swings due to changing weather conditions require construction and operation of more flexible, dispatchable natural gas-fired generation to compensate for the variations in wind and solar output.[2]

Mature, utility-scale technologies include pumped hydroelectric and compressed air storage. Several pumped hydroelectric facilities have been operating in California for decades. The 1,212-MW Helms facility has been operated by the Pacific Gas and Electric Company since 1984.

California's energy agencies recognize the key role that storage will play in integrating wind and solar resources in a "high variable energy" system in setting an ambitious target for the procurement of energy storage capacity for 2020. On October 17, 2013, the CPUC established a target of 1,325 MWs for energy storage development, apportioning it to the transmission and distribution systems and the customer side of the meter (D.13-10-040) (CPUC 2013c).

Energy storage cannot replace generation as a source of energy because it requires injections of energy in excess of the amounts that are discharged when the stored energy is needed. However, energy storage can replace generation capacity by being charged during non-peak hours and discharged on peak, in lieu of dispatching natural gas-fired generation. If located in a transmission-constrained area, storage can replace generation capacity needed for local reliability in the Moorpark sub-area.

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[2] In some systems (in the Pacific Northwest, for example), there is sufficient dispatchable hydroelectric energy to balance a wind- and solar-intensive generation fleet. The scale of wind and solar development in California, however, is such that energy storage is expected to absorb surplus generation during midday hours, as well as use energy generated during the day to reduce the need for energy and capacity from natural gas-fired generation resources during evening hours.

CONCLUSIONS FOR PREFERRED RESOURCES

In the Track 1 decision, the CPUC's findings refer to the CAISO technical studies showing a "need for in-area generation with operational characteristics similar to retiring OTC plants in the Moorpark sub-area of the Big Creek/Ventura local area" (CPUC 2013a). The CPUC set the minimum procurement level of 215 MWs for the Moorpark sub-area stating that it is the most likely size for a power plant to replace the existing OTC units in the area (i.e., the retiring MGS units).

The Track 1 decision (D.13-02-015) discusses technological requirements for local capacity. Testimony presented by CAISO and SCE witnesses confirmed that resource procurement is guided by the need to satisfy CAISO criteria for local reliability in particular locations (e.g., the Moorpark sub-area). Flexible resources are needed to ensure system reliability.[3] CAISO testimony on the ability of different resources to satisfy local reliability is summarized in the Track 1 decision (CPUC 2013a):

> *The ISO finds that gas-fired generation meets its criteria [for the provision of local reliability services], as well as any other resources (or combination of resources) which have the same performance criteria as gas-fired generation. Demand response resources and [combined heat and power, also referred to as cogeneration] may meet the ISO's criteria, but not at this time. It is possible that other resources will pass the ISO test as well in the future. Of course, acquisition of more energy efficiency and demand side resources would reduce the LCR need.*

Selected preferred resources might meet the CAISO's criteria for contributing to local reliability. The CAISO stated that it would work with SCE and the CPUC to develop the requirements needed for resources to compete in the procurement process. The CPUC provided this directive:

> *We will require SCE to consult with the ISO regarding ISO performance characteristics (such as ramp-up time) for local reliability. In its application to procure specific resources to meet local reliability needs…SCE shall provide documentation of such efforts and how SCE meets ISO performance requirements.*

On May 26, 2016, the CPUC approved SCE's contract for a new 262-MW simple-cycle natural gas-fired peaking facility at the P3 site, In approving the contract, the CPUC has effectively found that preferred resources beyond those procured by SCE in response to its RFO could not feasibly and reliably be counted on to cost-effectively meet local reliability needs.

[3] Flexibility is characterized, in part, by a resource's ability to be dispatched by the CAISO, and ramped up and down to produce or curtail energy production.

RELATIONSHIP OF THE POWER PLANT TO THE PROJECT SITE

The Warren-Alquist Act addresses aspects of an applicant's site selection criteria for thermal power plants and the use of an existing industrial site for such use when the project has a strong relationship to the existing industrial site. When this is the case, it is "reasonable not to analyze alternative sites for the project" (Pub. Resources Code, § 25540.6, subd. (b)). This subsection of the analysis addresses the project's strong relationship to the project site, both from a regulatory and practical standpoint, which provides part of the context for staff's analysis of alternatives to the proposed P3.

USE OF THE EXISTING MANDALAY GENERATING STATION FOR ELECTRICAL POWER GENERATION

The long-term historical use of the project site for electrical power generation is applicable to the discussion of the project's strong relationship to the site. This analysis recognizes the fact that the P3 would be constructed and operated at the existing MGS site. MGS Units 1 and 2 (430 MWs total capacity) were built in the 1950s and have provided local reliability to the Big Creek/Ventura local reliability area since their construction. MGS Unit 3 (130 MWs) is a gas turbine unit commissioned in 1970 that also provides local reliability. An artificial berm was constructed along the northern and eastern edges of the project site in the early 1970s to protect the facility from flooding. Southern California Edison owns the 220-kV switchyard located immediately north adjacent to the MGS site (NRG 2015a).

EXPANSION OF EXISTING COASTAL POWER PLANTS

The California Coastal Act of 1976 (Coastal Act) protects coastal resources from the major impacts of power plant siting. In 1978, the California Coastal Commission (Coastal Commission) adopted a report that satisfied a requirement of the Coastal Act to designate specific locations in the coastal zone where the location of an electric generating facility would prevent the achievement of the objectives of the Coastal Act (Pub. Resources Code § 30413(b)). The 1978 report was revised in 1984 and re-adopted in 1985. In accordance with the Coastal Act, the report designates sensitive resource areas along the California coast as unsuitable for power plant construction and provides "that specific locations that are presently used for such facilities and reasonable expansion thereof shall not be so designated." This policy encourages expansion of existing power plant sites if new plants are necessary, thereby protecting undeveloped coastal areas (Coastal Commission 1985).

In a related effort, the Energy Commission prepared a 1980 study that examined opportunities for the reasonable expansion of existing power plants in the state's Coastal Zone and reviewed the effects of the designated resource areas on expansion opportunities. The 1980 study defines "reasonable" in this context to mean the provision or maintenance of land area adequate to satisfy a specific site's share of the state's need for increased electrical power generating capacity over the Energy Commission's planning intervals of 12 and 20 years. The study also gives practical consideration to coastal power plant expansion and siting opportunities. The ancillary support facilities already exist at the power plant sites, and the industrial-type land use has been

established, which are important points to consider from a practical standpoint (Energy Commission 1980).

The expansion areas should be inside or adjacent to the existing site boundaries, or within a distance that would permit the cost effective use of the existing power plant support facilities, where necessary or advisable. The 1980 study acknowledged that other conventional siting factors (e.g., local land use plans) could affect expansion opportunities. The Energy Commission study is not intended to be used to endorse specific sites or types and sizes of power plants for expansion (Energy Commission 1980).

The 1980 study describes expansion opportunities for various combinations of plant types and sizes at 25 evaluated sites. The MGS is characterized as having on-site "expansion opportunities," while off-site expansion opportunities are constrained by endangered species habitat and wetlands (Energy Commission 1980). The P3 would be located inside the existing MGS site, and no off-site expansion of power plant facilities would be required.

POTENTIAL FOR THE PROPOSED P3 TO CONTRIBUTE TO LOCAL GRID CAPACITY REQUIREMENTS

The CAISO regularly evaluates grid reliability issues in its balancing authority area for the state. The CAISO develops and publishes its annual *Transmission Plan*, which includes a comprehensive evaluation of the CAISO transmission grid identifying the upgrades required to successfully meet California's energy policy goals, maintain grid reliability requirements, and provide economic benefits to ratepayers. The CAISO's transmission planning process involves collaboration with the CPUC, the Energy Commission, and other stakeholders. The 2015–2016 Transmission Plan was adopted by the CAISO Board of Governors in March 2016.

A core responsibility of the CAISO is to identify and plan the development of solutions, transmission or otherwise, to meet future grid needs (CAISO 2016). The 2015–2016 Transmission Plan studies for the Southern California bulk transmission system were focused on assessing the adequacy of approved transmission and resource procurement authorizations with updated *load* (i.e., energy use) forecast assumptions. The planning process also assessed whether resource procurement could effectively meet identified reliability needs in the area and potential alternatives in case approved procurement is determined to be insufficient. In its area-specific assumptions, the CAISO evaluated the long-term LCR studies for the three local reliability areas (LRAs)—Big Creek/Ventura, LA Basin, and San Diego/Imperial Valley.

In its *2025 Local Capacity Technical Analysis* from the *2015–2016 Transmission Plan*, the CAISO summarized LCRs for the Southern California LRAs. Critical contingencies are identified for the Moorpark sub-area of the Big Creek/Ventura LRA.[4] The limiting

[4] The loss of Moorpark-Pardee 230-kV #3 transmission line followed by the loss of Moorpark-Pardee 230-kV #1 and #2 transmission lines, which would cause voltage collapse.

contingency establishes an LCR need of 516 MWs in the Moorpark sub-area, which exceeds existing available resources by 234 MWs after the likely retirement of the Ormond Beach Generating Station and MGS Units 1 and 2 by the end of 2020 (CAISO 2016). Due to the retirement of OTC generators, the use of 114 MWs of *additional available energy efficiency* assumed in the CAISO study is critical, and without it, the LCR will be higher by approximately that amount.

On May 26, 2016, the CPUC issued D.16-05-050 approving, in part, SCE's request for offers to meet LCR in the Moorpark sub-area pursuant to its Track 1 Decision for the 2012 LTPP (D.13-02-015). SCE's selected contracts that were approved by the CPUC include 262 MWs of incremental natural gas-fired generation (i.e., new capacity) that would be provided by the proposed Puente Power Project. The CPUC also approved several preferred resource load reduction contracts with energy efficiency and solar generation projects totaling approximately 12 MWs. CPUC's D.16-05-050 states that with its approval of these contracts, SCE has satisfied its obligation to procure between 215 and 290 MWs in the Moorpark sub-area for local reliability purposes. In its 2025 assessment of LCRs, the CAISO concludes that no resource deficiency will occur in the Moorpark sub-area with the CPUC's approval of SCE's procurement selection for the area (CAISO 2016).

ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED CONSIDERATION

A range of alternatives were considered by staff during the planning process for this analysis but later eliminated from detailed consideration because they could not feasibly be accomplished, would not avoid any significant impacts, or would result in new significant impacts. The subsections below discuss the following:

- Staff's analysis of online data compiled by the U.S. Environmental Protection Agency (EPA) on various sites and facilities in the project area,
- Sites suggested for analysis by City planning staff, and
- Retrofit alternative scenarios that could allow continued operation of MGS Units 1 and 2 without using ocean water as a source for power plant cooling.

The analyses that follow provide the reasons for eliminating most of these alternatives from detailed consideration, except for the City's recommended Site 4 and a portion of Site 6b.

BROWNFIELD SITES FROM ONLINE DATA

Staff worked to identify potentially feasible brownfield sites that could serve as alternative locations to construct and operate a power plant facility similar to the proposed P3. In urban planning, a brownfield site (or simply a brownfield) is land previously used for industrial purposes or some commercial uses, and usually refers to disturbed lands. The AFC identifies the MGS site as brownfield land (NRG 2015a).

As discussed below under “City of Oxnard Alternative Sites,” two off-site alternatives are fully analyzed: Del Norte/Fifth Street Off-site Alternative and Ormond Beach Area Off-site Alternative. Both sites are considered brownfield sites because they have been used for industrial purposes and are located in industrial areas in Oxnard. Because these sites are not listed in the EPA online database, staff assumes they are not subject to monitoring or regulation by the EPA.

Using data available through the EPA online databases, staff mapped brownfield sites based on the criteria below. The following mapping criteria were developed by staff to identify potentially feasible brownfields:

Criteria for Identifying Possible Alternative Brownfield Sites

- Located in the Moorpark sub-area of the Big Creek/Ventura local reliability area,
- Cover approximately 10 to 20 acres,
- Located within a mile of a natural gas pipeline (12 inches or greater in diameter) and 5 miles of a 220- to 230-kV transmission line that could connect to an SCE substation with the potential to serve the Moorpark sub-area and not cause “downstream” impacts on the transmission grid, and
- Located outside of the Coastal Zone.

Alternatives Figures 1a and 1b depict portions of the 220- to 230-kV transmission lines and natural gas pipelines staff used to assess potential alternative sites.[5]

Locating brownfield sites that satisfied the above criteria was the first step in a process to identify potential alternative brownfield locations for the P3. The data that was collected and assessed was at a sub-regional level, encompassing the southern areas of unincorporated Ventura County and the Big Creek/Ventura local reliability area.

Staff identified 85 presumed brownfields that were thought to meet the criteria listed above. Based on a review of the 85 brownfields’ existing land use data, level of development, and surrounding land uses, the group of sites was reduced to 26 brownfields. Staff evaluated these brownfields at a more refined geographic scale and eliminated most of those remaining 26 sites, which appeared to be located within approximately 1 mile of residential development. For the remaining six presumed brownfields, staff attempted to confirm their locations to gather site-level data necessary for more detailed analysis (i.e., to determine site availability and identify potential on-site biological resources).

[5] Water pipeline data at the sub-regional scale was unavailable to assess water availability for brownfields. However, water pipeline data was available to evaluate water source availability for the alternative sites recommended for analysis by City planning staff.

However, Energy Commission staff encountered issues with the brownfield data that made it impossible to use to identify sites for further study. Staff identified these general issues, which could not be resolved:

- The brownfield data was created to be used at a scale that is not accurate enough to line up with parcel geographic information system (GIS) data needed to calculate acreage.
- The parcel and brownfield geographic information system data have different coordinate systems, and when one feature is re-projected, it distorts the location of the brownfield enough to move some of the points into nearby, incorrect parcels.
- Staff determined that the EPA brownfield data included all of the EPA's Facility Registry Service facilities, which identifies, collects, verifies, stores, and maintains a set of locational data on facilities and sites of environmental interest that are subject to regulation. Staff determined that it was not possible to isolate the brownfields in the data.

Staff's work to apply the screening criteria to the EPA data resulted in a list of six sites that were considered infeasible for study as potential off-site alternatives. These sites did not meet, or only partially met, the screening criteria:

- Wayne J. Sand and Gravel – A large-scale sand and gravel mining operation east of State Highway 23 between Bardsdale and Moorpark.
- Petrominerals Corporation – A crude petroleum and natural gas extraction operation immediately south and west of extensive residential development in Castaic, west of Interstate 5.
- Monitoring Station – A site or property on Telegraph Road near its intersection with E. Main Street, in a developed urban area in Ventura.
- Jiffy Lube #3283 – A business on Ridge Route Road in Castaic, east of Interstate 5.
- Hill Canyon Wastewater Treatment Plant – A site on Santa Rosa Road in an agricultural area east of Camarillo and north of Newbury Park, approximately one-third mile from a residential area.
- Danny Terry Painting – A site on Ventura Road in Ventura, adjacent to the Santa Clara River and the Ventura Highway.

CITY OF OXNARD ALTERNATIVE SITES

At the August 27, 2015, Energy Commission environmental scoping meeting and informational hearing in Oxnard, City of Oxnard (City) planning staff presented five alternative sites for staff to consider in its evaluation of project alternatives for the proposed P3 (City of Oxnard 2015a). The City later added another site ("Ormond Beach area along SCE line"), which consisted of 12 parcels in the area of Edison Drive and Hueneme Road, in the south area of Oxnard (City of Oxnard 2015b). Staff aggregated the parcels into two separate sites (6a and 6b), for a total of seven alternative sites evaluated by staff. The City's alternative sites are shown as Sites 1–5 and 6a and 6b on

Alternatives Figures 1a and 1b; these figures also show portions of natural gas pipelines and 220- to 230-kV transmission lines in the vicinity of the alternative sites.

The sites are as follows:

1 – Ventura County Sanitation District Site (commonly referred to as the "flower field")

2 – Beedy Street Site and County Two Parcel Site

3 – Power Machinery Site

4 – S. Del Norte/Fifth Street Site

5 – Mission Rock Energy Center Site

6a – Ormond Beach Area Sites East of Edison Drive

6b – Ormond Beach Area Sites West of Edison Drive

The information provided by the City for each of the seven alternative sites included aerial images, land use and zoning, acreages, assessor parcel numbers, and ownership. The sites are privately owned. Staff initiated its evaluation knowing that NRG does not have site control of these alternative sites. Acquiring site control would entail negotiating a lease agreement or land purchase before any of these sites would present viable alternatives to the proposed P3.

Staff assessed each of the seven alternative sites and all but two were eliminated from further evaluation—Site 4 and a portion of Site 6b. In its evaluation, staff considered surrounding land uses, environmental constraints, proximity to linear infrastructure, and the potential for NRG to gain site control. Key technical staff provided assistance in the areas of biological resources, land use, water resources, and transmission system engineering. In December 2015, NRG submitted an *Alternatives Site Summary* with information comparing the alternative sites suggested by Energy Commission and City planning staff. Based on Energy Commission staff's technical input and additional information from City planning staff and NRG's *Alternatives Site Summary*, Sites 1, 2, 3, 5, and 6a were eliminated from further evaluation. (Although staff's numbering of the sites does not correspond to NRG's numbering of sites in the *Alternatives Site Summary*, the site names closely correspond.) Staff's screening analyses for these sites are provided below.

Annexation/Site Control

Sites 1, 2, and 6a are located in Oxnard's sphere of influence just outside its boundary. Site 1, an approximately 20-acre agricultural property, lies west of and immediately adjacent to Victoria Avenue, a portion of which is owned by Oxnard. According to information provided by the applicant in its *Alternative Sites Summary* (NRG 2015b), Site 1 is classified as prime farmland. Site 2 consists of two adjacent groups of parcels located in the area of Beedy Street and East Vineyard Road (State Highway 232). The parcel group situated adjacent to Oxnard's boundary is composed of two county-owned

parcels totaling approximately 20 acres. A portion of this land is currently used by the Ventura County Juvenile Justice Complex. The second group of parcels is situated immediately southeast of the county-owned properties; the group consists of at least 30 small, privately-owned parcels totaling approximately 30 acres along Beedy Street. Several of the parcels have been cleared of structures, while a few are used for trucking and transit/transportation-related activities.

Site 6a, consisting of eight of the aforementioned 12 parcels, is located east of Edison Drive and adjacent to Hueneme Road. The parcels appear to be in agricultural use, and four of the eight parcels are adjacent to Oxnard's boundary. As indicated in the applicant's *Alternative Sites Summary*, three of the Site 6a agricultural parcels are owned by SCE, which would make site control of these properties very unlikely for the P3 applicant.

According to City planning staff, parcels immediately adjacent to Oxnard's boundary could be annexed without voter approval. Before Site 1 could be annexed, Oxnard would first need to expand its boundary to include a portion of the Victoria Avenue right-of-way adjacent to the site; once annexed, agricultural parcels could be considered developable as industrial-type uses under the City's land use policy. (The EIR on the City of Oxnard General Plan (General Plan) identified the conversion of Important Farmland to be a significant and unavoidable impact of build-out under the General Plan.) For Sites 5 and 6a, the parcels that do not abut Oxnard's boundary could not be annexed without voter approval.

The annexation process, which is governed by local agency formation commissions, or LAFCOs, could result in a prolonged regulatory process that could delay a project for an indeterminable amount of time. The agricultural properties in unincorporated areas could theoretically be developed as industrial uses without annexation. However, the process of converting agricultural lands in the county to other uses presents a potentially lengthier regulatory process involving consideration by local voters, multiple city councils, and the Ventura County Board of Supervisors.

Site 5 is an industrial-type property located in the county. Since the time that the City recommended this site as an alternative location for a project like the P3, an AFC was submitted to the Energy Commission by Mission Rock Energy Center, LLC, for the construction and operation of a natural gas-fired generating station at the site (Mission Rock Energy Center, 15-AFC-02); the AFC is currently under review. Given the status of this site as the proposed location for a power plant by another developer, it is assumed to be unavailable to NRG for development of a project like the P3.

Site 6b consists of the remaining four of the 12 parcels. These parcels are located in Oxnard on the north side of E. McWane Boulevard between Arcturus Avenue and Edison Drive. Two of the four parcels, located just west of Edison Drive, are currently in use for major manufacturing. Based on staff's observation of the intensity of development and activity taking place on the two parcels, the project applicant would not likely be able to secure site control of the property.

The two remaining Site 6b parcels are located at the intersection of Arcturus Avenue and E. McWane Boulevard. The two contiguous parcels are privately owned by the same owner and could potentially be merged to form one, approximately 14-acre parcel for development of a project similar to P3. The site is in an industrial area approximately one-half mile inland from Ormond Beach. Early in 2016, the site was completely graded and surfaced with gravel. As of April 2016, it is being used as a parking area for rows of new automobiles.

According to the applicant's *Alternative Sites Summary*, the Ormond Beach Area parcels are not available for site control and development. In July 2013, the applicant offered a "reasonable, market-based offer" to the owner of the parcels, which was declined (NRG 2015b). It is unknown whether the owner would reconsider an offer to sell or lease some of the properties to NRG.

Site 4 is located in the eastern edge of Oxnard in a semi-rural area at the intersection of S. Del Norte Boulevard and E. Fifth Street (State Highway 34). The privately-owned site is located on a single, approximately 25-acre parcel. The north half of the property is in agricultural use. An asphalt recycling center (also called a concrete batch plant) is located on the south half of the site. Land uses and businesses in the surrounding area include warehouse commercial, industrial, and agricultural uses. It is unknown whether the property owner would consider an offer to sell or lease the property to NRG for development of a power plant project like the P3.

Potentially Significant Environmental Impacts

In addition to the site control and annexation issues outlined above, the construction and operation of a project like P3 at Site 1 or 2 would result in potentially significant impacts relating to biological, visual, agricultural, and soil and water resources. Site 1 is situated immediately south of the Santa Clara River. As stated in the applicant's *Alternative Sites Summary*, this river's ecosystem is one of the most biologically significant in Southern California and supports numerous threatened and endangered species (NRG 2015b). Development of P3 at Site 1 would have an adverse effect on the river's critical habitat and, because of the site's agricultural use, on habitat common to agricultural lands.

Should the site be converted to an industrial use, resource agencies would request mitigation for the loss of agricultural lands, which provide foraging habitat for raptors and other avian species. Although this type of impact is mitigable, the process would most likely add time and complexity to the project. In addition, Site 1 could cause visual impacts on residential areas located within approximately one-half mile south and east (depending, in part, on the orientation of residences and whether intervening landscape elements or built structures blocked views toward the site), as well as a public golf course located east of the site across Victoria Avenue. Development of a power plant at Site 1 would likely require construction of a new natural-gas pipeline across the golf course and adjacent to the residential area, to connect with an existing natural gas pipeline over 1 mile east of the site.

Development of a power plant at Site 2 would also entail construction of a natural-gas pipeline over 1 mile long. A potential route and transmission line interconnection point for Site 2 is undetermined.

Due to the proximity of Sites 1 and 2 to the Santa Clara River, development of a power plant at the either site could result in flood damage to the site during major storm events. Engineered levees are being constructed along the south (left bank) levees of the river, although some levee segments are not yet complete. (Staff is currently evaluating potential flooding impacts for the Mission Rock Energy Center (MREC) project near the north side of the Santa Clara River; the MREC site is approximately 4.5 miles upstream of Site 2.)

These sites could also be impacted due to migration of pollutants to the river from storm water runoff. If no municipal sewer service is available at the sites, permits for either a septic system for process wastewater or to discharge the process wastewater to the river could prove difficult to obtain. However, obtaining permits for process wastewater would require mitigation for potentially significant impacts.

Site 3 is a privately-owned, 25-acre agricultural parcel located east of N. Del Norte Boulevard and south of El Camino Avenue and State Highway 101. The surrounding area is characterized by agricultural uses. The site does not have direct, paved access to either N. Del Norte Boulevard or El Camino Avenue. According to City planning staff, for the purposes of fire vehicle access, a paved road would be required to connect the site to N. Del Norte Boulevard. The paved road would necessarily traverse an adjacent private property.

Development of the P3 at Site 3 would entail construction of a natural-gas pipeline over 1 mile in length to connect to an existing natural gas pipeline of sufficient capacity. A potential route and transmission line interconnection point for Site 3 is undetermined.

Site 3 is located less than 1 mile northwest of Camarillo Airport. Traffic and Transportation staff indicated that aircraft from the airport would be impacted by the high-velocity thermal plumes that would be emitted by a power plant like P3 at the site. Aircraft would be unable to avoid the thermal plumes, which could be hazardous to aircraft and pilots.

Conclusions for City of Oxnard Alternative Sites

Based on an evaluation of the City's alternative sites, staff dismissed Site 5, two parcels at Site 6b, and Site 6a due to issues relating to existing or proposed on-site land uses or site jurisdiction. The Site 6b parcels adjacent to Edison Drive are developed industrial sites. The presence of existing land uses and the site control issue would probably preclude development of a project similar to P3 at these locations. Even if the applicant could gain access to the parcels adjacent to Oxnard's boundaries, the annexation process would likely delay implementation of the project for an indeterminable length of time. A prolonged delay could adversely affect the potential feasibility of these sites as alternatives to the P3.

Staff dismissed Sites 1 and 2 also due to issues relating to site control and annexation, and because of their potential to impact environmentally sensitive resources. Development of a project like P3 at Sites 1 and 2, because of their proximity to the Santa Clara River, could potentially impact the river's sensitive habitat and be subject to flooding during major storm events. Development of a power plant at Site 1 would convert agricultural land to an industrial use.

While development of a project like P3 at any of the alternative sites could potentially create environmental impacts such as those described above, staff cannot determine at this time the significance of foreseeable impacts and whether potential impacts could feasibly be reduced to less than significant with implementation of mitigation measures. Because of the proximity of Sites 1 and 2 to the Santa Clara River, staff concludes that potentially significant impacts at either of those sites could be greater than the impacts that would occur under the proposed project.

Site 3 was eliminated from further evaluation due to its close proximity to the Camarillo Airport (approximately three-quarter mile), which would cause significant impacts on aircraft and pilot safety that could not be reduced to less than significant.

Site 4 at the intersection of S. Del Norte Boulevard and E. Fifth Street and the two Site 6b parcels at the intersection of Arcturus Avenue and E. McWane Boulevard are privately-owned properties in Oxnard. The south half of Site 4 covers approximately 12.5 acres and could potentially be large enough to allow for construction of a project similar to P3. Similarly, the two Site 6b parcels covering approximately 14.5 acres could potentially accommodate a project like P3. Staff's initial environmental screening analysis of the sites did not identify impacts that would be greater than those identified for the proposed project. Therefore, Site 4 and the two Site 6b parcels are evaluated in detail under the subsections below, "Del Norte/Fifth Street Off-site Alternative" and "Ormond Beach Area Off-site Alternative." The analyses below include discussions of potential feasibility issues for these alternatives.

ORMOND BEACH GENERATING STATION

Staff also considered the Ormond Beach Generating Station (OBGS) as an alternative site location for P3. The OBGS is an existing 1,516-MW capacity natural gas-fired power plant owned and operated by NRG. The OBGS is located in Oxnard's Coastal Zone, and the beaches adjacent to the site are designated as critical habitat for the western snowy plover (*Charadrius nivosus nivosus*). The adjacent lands to the northwest and southeast contain mapped emergent and forested freshwater wetlands, some of which are designated critical habitat for tidewater goby (*Eucyclogobius newberryi*) (NRG 2015b).

According to the City and the applicant, many of the parcels surrounding the site are under the ownership of the State Coastal Conservancy, The Nature Conservancy, and the County of Ventura. The Coastal Conservancy is currently working to restore approximately 750 acres of wetlands in the vicinity of the OBGS, and a feasibility study indicates that approximately 1,750 acres surrounding the site are highly suitable for ecological restoration (NRG 2015b). The wetland restoration study is further discussed

below under the biological resources analysis for the "Ormond Beach Area Off-site Alternative."

The *Alternatives Sites Summary* explains that the P3 could be sited on approximately 3 acres of the 37-acre OBGS. The project could reuse and repurpose several existing OBGS facilities, including the administration building, warehouse, water storage tanks, and ammonia tanks situated on the OBGS site but outside of the 3-acre area. The OBGS site could also accommodate construction laydown, offices, and parking (NRG 2015b).

The proposed P3 at MGS would be situated adjacent to SCE's Mandalay Substation. Similarly, a new power block at the OBGS could connect to an existing 220-kV breaker position at the Ormond Beach Substation following the possible retirement of the OBGS Units 1 and 2 by the end of 2020 to meet the OTC Policy's compliance date schedule. (the same date as for MGS Units 1 and 2 and several other generators in the LA Basin and Big Creek/Ventura local reliability areas). Like the proposed P3 at MGS, a new generating facility at OBGS could connect to an existing, on-site natural gas pipeline as well as an existing potable water supply for process wastewater. The process wastewater could be stored in an existing OBGS retention basin and discharged to the ocean via an existing outfall, similar to P3 at MGS. Sanitary wastewater could be discharged to the OBGS septic system (NRG 2015b). The proposed P3 at MGS would also discharge sanitary wastewater to an existing septic system.

Alternatively, a new connection for recycled water could be made to the City of Oxnard Advanced Water Purification Facility (AWPF) at West Hueneme Road and South J Street, approximately 1.2 miles northwest of the site, for the purpose of supplying process wastewater at the OBGS. The process wastewater and even sanitary wastewater could be discharged to a new wastewater pipeline to the AWPF (NRG 2015b). However, construction of the recycled water connection and wastewater pipeline may result in potentially significant impacts. The P3 at MGS does not include a proposal for a recycled water connection.

As stated above, the OBGS site is situated within the Coastal Zone. The General Plan designation is PUE Energy Facility, and the zoning designation is EC Coastal Energy Facility (same as the MGS site), which allows for siting, construction, modification, and maintenance of power-generating facilities and electrical substations. An electrical power-generating plant and its accessory facilities is considered a conditionally permitted use and is subject to a coastal development permit, except in cases where the local jurisdiction's approval authority is subsumed by the Energy Commission's site certification process (NRG 2015b) .[6]

[6] On June 7, 2016, the City of Oxnard City Council voted unanimously to approve an amendment to the General Plan to prohibit power generation facilities greater than 50 MWs in areas subject to coastal hazards (including the MGS, P3 site, and OBGS). Unless rescinded or otherwise reconsidered, the General Plan amendment will become effective July 7, 2016. Staff will address any inconsistencies

Similar to the P3 at MGS, the OBGS lies in close proximity to critical habitat for western snowy plover. Development of the P3 at OBGS would not reduce or avoid potential impacts on species using the beach and dune habitats. In addition, the OBGS site is situated within a historic wetland area that has been drained and filled, while surrounding lands are characterized by wetland areas, some of which are designated critical habitat for tidewater goby (NRG 2015b).

As mentioned, the wetland areas have been the subject of ecological restoration efforts led by the State Coastal Conservancy. The efforts aim to rehabilitate and preserve coastal wetlands and associated critical habitat. Should the OBGS power plant be shut down to comply with OTC Policy and subsequently be dismantled, then the wetlands and habitat areas north and south of the site could be linked at the plant's current location into one large, contiguous coastal preserve. In addition to the environmental benefits, the construction costs may be reduced for the restoration project, as building around the power plant site would be more costly (City of Oxnard 2015b). Although development of P3 at OBGS would not prevent wetland restoration activities, it could inhibit a fuller realization of reclaiming local wetlands and critical habitat areas.

For the reasons discussed above, staff eliminated the OBGS from further detailed evaluation as an alternative site to the proposed P3.

RETROFIT ALTERNATIVE SCENARIOS

Staff considered the potential feasibility of retrofitting the two, existing 215-MW MGS conventional steam boiler units to reduce impingement mortality and entrainment of marine life and comply with the OTC Policy. This analysis focuses on retrofits that would ensure compliance with the OTC Policy. It is assumed that any retrofit scenario would have a goal to continue long-term operation of MGS Units 1 and 2.

As discussed below, under the No-Project Alternative, should the applicant not achieve compliance with the OTC Policy by December 31, 2020, any assumptions other than shut down and decommissioning of these units would be based on speculation. Therefore, the retrofit alternative scenarios described below are not considered part of the No-Project Alternative as either of these retrofits is assumed to occur prior to the OTC Policy compliance date of December 31, 2020, to continue long-term operation of Units 1 and 2.

For existing power plants, the OTC Policy establishes two compliance tracks. Track 1 requires a minimum 93 percent reduction in intake flow rate (gallons per minute) for each unit compared to the unit's design capacity. Under Track 2, a power plant owner or operator must reduce impingement mortality and entrainment of marine life on a unit-by-unit basis to a level comparable under first track compliance. Compliance under Track 2 is an option if the owner or operator demonstrates to the State Water Board's satisfaction that compliance with Track 1 is infeasible. The CPUC's decision responding

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between the proposed P3 and local land use plans arising from approval of the General Plan amendment in the Final Staff Assessment.

to the retirement of OTC power plants discusses the OTC Policy, stating that “most generators in their plans filed with the [State Water Board] have indicated that they are pursuing the first option, which implies retirement or repowering of the facility” (D.13-02-015) (CPUC 2013a).

Implementing structural and operational controls to achieve compliance with the OTC Policy under Track 2 would likely restrict operations so severely that the power plant would no longer be eligible to provide ancillary services and produce an associated revenue stream. It is also unlikely that MGS Units 1 and 2 could provide flexible generation to support renewable energy development under such restrictions. Staff acknowledges that the OTC Policy includes a mechanism to extend the compliance date set by the State Water Board. However, such an extension would need to come directly from an authorizing agency for the purpose of maintaining grid reliability. Any such extension is not considered a long-term solution for complying with the OTC Policy.

Therefore, staff evaluated the feasibility of two permanent retrofit scenarios that would allow continued, long-term operation of Units 1 and 2. In accordance with CEQA, these retrofit scenarios were also evaluated to determine if they could reduce or avoid any of the environmental impacts associated with the proposed P3. Through coordination with Energy Commission engineering staff, two retrofit alternative scenarios were evaluated:

1. Retrofit MGS Units 1 and 2 to become an air-cooled facility.

2. Retrofit MGS Units 1 and 2 to use another cooling water source (other than ocean water). Under this retrofit scenario, Units 1 and 2 would continue operating using wet cooling.

For either of the retrofit scenarios, continued operation of existing MGS Units 1 and 2 would have a greatly reduced ability to meet the basic project objective to provide operational flexibility with rapid-start and steep ramping capability. Also, the retrofit scenarios would entail continued operation of an aging power plant with a lower efficiency rating compared to the proposed P3.

Air Cooled Condenser Retrofit Scenario

This retrofit would require reconfiguring the existing plant to be an air-cooled facility by installing ACC infrastructure. This scenario assumes retrofitting Units 1 and 2, each with a generating capacity of approximately 215 MWs. The project applicant discussed this retrofit scenario in the AFC stating that the site would have sufficient space to accommodate separate ACC units for Units 1 and 2, each measuring approximately 290 feet long, 130 feet wide, and 100 feet tall. Using this assumption, the ACCs would cover a total of approximately 2 acres on the site. It could be feasible to locate the ACCs in the space between the power block and the SCE switchyard without affecting the existing ammonia storage facility north of the MGS Units 1 and 2. The existing shop/warehouse structure, parking area, and administration building would be displaced.

Due to the age of the existing MGS power generating Units 1 and 2 (constructed in the 1950s), retrofitting the existing boilers for air-cooling would result in a less efficient facility compared to the proposed P3 system (dry-cooled, simple-cycle facility). Because of decreased efficiency, such a retrofit would increase air emissions compared to the P3. Other than possibly reducing the proposed project's construction-related air emissions impacts, the ACC retrofit scenario would fail to reduce or avoid any significant impacts of the proposed P3. Therefore, staff has removed the ACC retrofit scenario from further consideration.

Wet-Cooled Retrofit Scenario

Oxnard's recycled water delivery system does not currently extend near the project site (NRG 2015a). Staff evaluated retrofitting the existing MGS to use potable water for cooling (as an alternative to ocean water) in an evaporative cooling tower. This retrofit scenario would leave the MGS as a wet-cooled facility, possibly at its existing 430-MW capacity. It is not known how often a retrofitted MGS with its old steam boiler facilities would be requested to run. Without knowing the annual capacity factor, the amount of water required for power plant cooling is unknown. When MGS Units 1 or 2 are not producing electricity, no cooling water is required. Staff estimates an upper value of approximately 5,000 acre-feet per year (afy) to cool a retrofitted MGS. If NRG retrofitted one of the MGS units and retired the other, the value would be lower. Wet cooling requires a significant quantity of water compared to the proposed P3, which would require approximately 16 afy for process and service water, most of which would be for the inlet air evaporative coolers used for power augmentation (NRG 2015a).

Use of fresh water for power plant cooling is discouraged by State Water Board and Energy Commission policies relating to water consumption by power plant facilities. The proposed P3 would use potable water for industrial processes and domestic use. Under the wet-cooled retrofit scenario, impacts on the potable water supply would increase compared to the P3 and be inconsistent with state water policies.

A wet-cooled retrofit system could cause formation of visible plumes (depending on whether such a retrofit used plume-abated cooling tower equipment). While the existing MGS generates visible plumes during steam blow-off, the proposed P3 would not generate visible water vapor plumes. Compared to the proposed P3, a potential increase in visual impacts could occur from such a retrofit. Use of fresh water for power plant cooling would fail to reduce or avoid any significant impacts of the proposed P3.

For the reasons described above, staff has removed the wet-cooled retrofit scenario from further consideration.

ALTERNATIVES EVALUATED IN DETAIL

Project alternatives evaluated in detail were selected based on their potential to attain most of the basic project objectives while reducing or avoiding any of the proposed project's significant impacts. In addition to the No-Project Alternative, staff carried forward two off-site alternatives and two conceptual site reconfiguration alternatives for analysis and comparison to the proposed project.

Summary discussions are provided below comparing the environmental effects of the project alternatives and the No-Project Alternative to the proposed P3. Environmental impacts that could potentially occur under a project alternative but that would not occur under the P3 are also discussed.

NO-PROJECT ALTERNATIVE

No development plan or proposal for the project site has been put forth that would allow an analysis comparing the impacts of such a plan to those of the proposed project. To comply with the OTC Policy, the MGS Units 1 and 2 would cease to operate on or before December 31, 2020. For the No-Project Alternative, staff considers shut down and closure of the existing MGS Units 1 and 2 the most likely result if the proposed P3 does not go forward. Demolition and removal of the Units 1 and 2 is not included in the assumptions and analysis for the No-Project Alternative. Although the MGS Unit 3 would continue operating, its continued operation is not part of the proposed P3 or the comparative analysis of the alternatives.

Shut down and decommissioning the MGS Units 1 and 2 would include initiation and completion of a prescribed list of activities to protect the public based on the requirements of applicable laws, ordinances, regulations, and standards (LORS). Examples of decommissioning activities that would be completed by the project owner over several months include the following (NRG 2015a):

- De-energize electrical equipment;
- Purge gases from equipment (e.g., natural gas, hydrogen);
- Remove oil from all pumps, motors, pipes, oil reservoirs, transformers, and other equipment;
- Electrically isolate equipment.
- Physically isolate equipment by disconnecting from piping systems or other means;
- Operate and maintain equipment as required for environmental permit compliance (e.g., storm drainage system);
- Remove the backup diesel generator from service; and
- Verify that all facilities are left in a safe condition.

Decommissioning Units 1 and 2 would not require any earth movement, soil disturbance, or work below site grade.

Hazardous chemicals would be hauled away in their own containers, such as totes. The largest hazardous fluid inventory could be the lube oil from the steam turbines and other storage tanks, which would be pumped out and hauled away by truck. Other tasks such as de-energizing and disconnecting electrical equipment, and mechanically disconnecting and capping pumps, piping, and other equipment, would be performed by manual craft personnel. It is assumed that decommissioning work would not require the use of heavy construction equipment (e.g., cranes).

Land Use Planning

Under the No-Project Alternative, the Energy Commission would not issue a license to NRG to construct and operate the project. The No-Project Alternative would not include construction of a facility or modification of an existing facility. In this circumstance, the Energy Commission would have no licensing or other discretionary authority regarding the future use or governance of the MGS site, including demolition and removal of MGS Units 1 and 2. It is assumed that Units 1 and 2 would remain nonoperational on the site. The MGS Unit 3 natural gas combustion turbine would continue to operate. Under the No-Project Alternative, any proposed future uses of any portion of the site would be subject to review and approval of a coastal development permit by the City.

Environmental Analysis

Alternatives Table 1 summarizes the comparison of impacts of the proposed P3 to the same or similar potential impacts under the No-Project Alternative. The comparisons of impacts to the proposed project are stated using these terms:

- Less than P3
- Similar to P3
- Same as P3
- Greater than P3

Impact conclusions for the proposed project and the comparative impacts to the alternatives are indicated using these abbreviations:

— = no impact

B = beneficial impact

LS = less-than-significant impact, no mitigation required

SM or PSM = significant or potentially significant impact that can be mitigated to less than significant

SU or PSU = significant and unavoidable or potentially significant and unavoidable impact that cannot be mitigated to less than significant

Comparative discussions for each environmental topic area listed below follow **Alternatives Table 1**.

Alternatives Table 1
Summary Comparison of Impacts of the Proposed P3 to the No-Project Alternative

Environmental Effect	Proposed P3	No-Project Alternative
Air Quality		
Construction and demolition-related emissions	PSM	—
Project operations emissions	PSM	—
Greenhouse Gases (construction- and demolition-related impacts)	PSM	—
Biological Resources		
Project construction and demolition impacts		
Impact on jurisdictional wetlands and other waters	SM	—
Impacts on common vegetation species	LS	—
Impacts on common wildlife species	LS	—
Impact of noise on nesting birds	PSM	—
Impacts on special-status plants and habitat	PSM	—
Impacts on special-status wildlife *(see note)*	PSM	—
Impacts on special-status birds with MGS Units 1 and 2 left on site	—	Greater than P3 (PSU)
Impacts of dust, nighttime lighting, and invasive weeds on biological resources	PSM	—
Biological resources note: excluding nesting birds		
Project operations impacts		
Impacts on biological resources relating to nitrogen deposition	LS	—
Impact relating to potential electrocution of avian species	PSM	—
Cultural Resources		
Impacts on surficial archaeological and ethnographic resources	—	—
Impacts on buried archaeological resources	PSM	Less than P3 (B)
Impacts on built environment resources	—	—
Geology and Paleontology		
Risk of damage to paleontological resources	PSM	—
Potential impacts on geological or mineralogical resources	—	—
Risk of surface fault rupture	LS	Similar to P3 (LS)
Risk of liquefaction, dynamic compaction, and lateral spread from strong seismic shaking	PSM	Similar to P3 (PSM)
Risk of potential excessive settlement or expansion of soils causing an impact on structures	PSM	Similar to P3 (PSM)
Risk of inundation by tsunami resulting from an earthquake or local submarine landslide	PSM	Same as P3 (PSM)
Hazardous Materials Management		
Risk of fire or explosion off-site from natural gas usage during project operation	PSM	Less than P3 (LS)
Risk of hazardous materials spill impact en route (off-site) from hazardous materials transport to the project site	PSM	Less than P3 (LS)
Risk of hazardous materials spill or migration off-site from hazardous materials storage and use on-site	PSM	Less than P3 (LS)
Risk of significant drawdown of emergency response services	LS	Same as P3 (LS)

Alternatives Table 1
Summary Comparison of Impacts of the Proposed P3 to the No-Project Alternative

Environmental Effect	Proposed P3	No-Project Alternative
causing off-site impact		
Noise and Vibration		
Potential noise impacts at noise-sensitive locations	PSM	—
Public Health		
Construction-related diesel particulate matter (DPM) emissions	LS	—
Project operations-related toxic air contaminants (TACs) emissions	LS	—
Socioeconomics		
Induce substantial population growth in an area, either directly or indirectly	LS	—
Displace substantial numbers of people and/or existing housing, necessitating the construction of replacement housing elsewhere	LS	—
Adversely impact acceptable levels of service for police protection and parks and recreation	LS	—
Increased property taxes, construction and operation employment income, and increased state and local taxes and fees	B	—
Soil and Water Resources		
Water quality impacts during project construction	PSM	—
Water quality impacts during demolition	PSM	—
Potential impacts from on-site and off-site flooding	PSM	—
Potential flooding hazard based on Federal Emergency Management Agency floodplain delineation maps *(see note)*	LS	Same as P3 (LS)
Water quality impacts from wastewater discharge	SM	Less than P3 (LS)
Water quality impacts from power plant operations	PSM	Same as P3 (PSM)
Potential impacts on potable water supplies	—	—
Water resources note: Based on current FEMA mapping effective 2010. May change when updated map is released in 2016.		
Traffic and Transportation		
Potential impacts from increased construction workforce traffic that is substantial compared to the existing traffic load and capacity of the street system	PSM	Less than P3 (LS)
Potential for increased workforce traffic to cause driver safety impacts during project demolition and/or construction	PSM	Less than P3 (LS)
Potential for increased workforce traffic to damage roads and bridges during project demolition and/or construction	PSM	Less than P3 (LS)
Potential impacts from increased traffic during project operation (i.e., post-construction traffic) that is substantial compared to the existing traffic load and capacity of the street system	LS	Less than P3 (LS)
Potential impacts from thermal plumes on aircraft and pilot safety	PSM	Less than P3 (Indeterminate)
Transmission Line Safety and Nuisance		
Impacts on aviation safety relating to location of transmission lines	LS	—
Interference with radio-frequency communication	LS	—
Potential for transmission lines to cause audible noise	LS	—
Potential fire hazards	PSM	—

Alternatives Table 1
Summary Comparison of Impacts of the Proposed P3
to the No-Project Alternative

Environmental Effect	Proposed P3	No-Project Alternative
Potential for hazardous shocks	PSM	—
Potential for nuisance shocks	PSM	—
Potential for electric and magnetic (EMF) exposure	PSM	—
Visual Resources		
Substantial adverse effect on a scenic vista	LS	Same as P3 (LS)
Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway	LS	Same as P3 (LS)
Substantially degrade the existing visual character or quality of the site and its surroundings		
KOPs 1, 4, and 5	LS	Similar to P3 (LS)
KOP 2	LS	Greater than P3 (PSU)
KOP 3	PSM	Greater than P3 (PSU)
Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area	PSM	Indeterminate
Waste Management		
Potential for impacts on human health and the environment relating to waste discharges	PSM	Less than P3 (—)
Potential for disposal or diversion of project materials to cause impacts on existing waste disposal or diversion facilities	PSM	Less than P3 (—)
Potential for impacts on human health and the environment relating to past or present soil or water contamination	PSM	Less than P3 (—)
Worker Safety and Fire Protection		
Risk of fire or explosion impact off-site resulting from natural gas usage during construction and operation	PSM	Less than P3 (LS)
Risk of significant drawdown of emergency response services causing off-site impact	LS	Less than P3 (LS)

Air Quality

Under the No-Project Alternative, there would be no emissions associated with the existing MGS Units 1 and 2 operations after 2020. It is assumed that the existing MGS Units 1 and 2 would be mothballed, and the structures would remain on the site. There could be negligible air emissions associated with operation of equipment required to close and secure the site. The MGS Unit 3 would continue as a permitted generating unit.

Under the No-Project Alternative, **no impacts** on air quality would occur compared to the proposed project, and **no impact** would occur relating to GHG emissions.

Biological Resources

Under the No-Project Alternative, potential impacts on biological resources from construction and operation of the proposed P3 would not occur. There would be no

grading of the site and no loss of on-site disturbed vegetation communities, including approximately 2.03 acres of Coastal Commission jurisdictional wetlands. The work required to decommission the existing MGS Units 1 and 2 (e.g., removing stored hazardous chemicals from parts of the facility) would not be expected to impact biological resources. The No-Project Alternative would have **no impact** on common vegetation and wildlife species from project demolition and construction. (**Tables 4.2-2** and **4.2-3** in the AFC list plant species observed at the site and wildlife species on and near the site, respectively.) Similarly, the No-Project Alternative would have **no impact** on special-status plant species at the project site (see **Biological Resources Table 3** in this staff assessment for a list of species). The No-Project Alternative would avoid filling the Coastal Commission jurisdictional wetlands in the P3 project footprint, and **no impact** would occur on the wetlands. The No-Project Alternative would avoid construction-related noise impacts on nesting birds.

As stated in the AFC for the proposed project, critical habitat for western snowy plover is designated on the beaches and dunes west, northwest, and southwest of the project site (NRG 2015a). No critical habitat is located on the project site. The proposed project would entail demolishing MGS Units 1 and 2 whereas under the No-Project Alternative, Units 1 and 2 would be retired and decommissioned but would remain standing on the site for the foreseeable future. The existing power plant structures would present potential nuisance nesting and perching opportunities for raptors and other predatory birds, which could lead to depredation of western snowy plover and California least tern nests on adjacent beaches and dunes. This potential impact would be **greater than P3** for special-status avian species. With implementation of mitigation measures, the impact could be reduced to less than significant; however, under the No-Project Alternative, the Energy Commission would not have the authority to require implementation of measures to reduce or avoid impacts on special-status avian species, and the impact would remain potentially significant and unavoidable. The City would retain its discretionary authority over land uses at the MGS site.

Cultural Resources

Under the No-Project Alternative, the site would remain an industrial facility with bordering uses ranging from natural parkland to oil production, agricultural uses, undeveloped open space, and residential development. All work required to decommission the MGS Units 1 and 2 would be conducted above grade, and no earth movement, excavations, or heavy construction would be required.

The archaeological and ethnographic setting presented in **Cultural Resources Appendix A** of this staff assessment applies also to this alternative.

Impacts on Surficial Archaeological and Ethnographic Resources

The No-Project Alternative would not involve construction of the P3 or any linear facilities. As such, the applicant would not conduct excavations or other ground disturbance at the site, or alter the existing MGS beyond decommissioning Units 1 and 2. No surficial archaeological sites or ethnographic resources were recorded in the P3 project area, and there would be no impacts on surficial archaeological sites or

ethnographic resources from the No-Project Alternative. The impact conclusion for potential damage to surficial archaeological resources and ethnographic resources is **no impact**.

Impacts on Buried Archaeological Resources

The No-Project Alternative would have a lesser impact on buried archaeological resources compared to the proposed P3 because no below-grade disturbance would occur under the No-Project Alternative. Under the proposed P3, significant ground disturbance would occur and could potentially impact as yet undiscovered buried archaeological resources. Therefore, impacts on buried archaeological resources under the No-Project Alternative would be **less than P3**. Because no ground disturbance would be necessary under this alternative, the lack of potential to damage buried archaeological resources is considered a beneficial impact of the No-Project Alternative.

Impacts on Built Environment Resources

As described in the **Cultural Resources** section of this staff assessment, no impacts on potential historic built environment resources have been identified for the proposed project. Under the No-Project Alternative, it is assumed the existing MGS would be shut down and decommissioned, and not demolished as it would under the proposed project. The MGS is considered ineligible for listing on the California Register of Historic Resources (CRHR); therefore, the impact conclusion for potential impacts on built environment resources is **no impact** for the proposed P3 and the No-Project Alternative.

Conclusion

The No-Project Alternative overall would have **no impact** on cultural resources, and compared to the proposed P3, the impacts overall would be **less than P3**.

Geology and Paleontology

Under the No Project Alternative no new structures or foundations would be constructed on the site, and no excavations or major earth work would be required. Therefore, no new structures or foundations would be at risk from seismic shaking events. The existing facility would remain on the site, and potential impacts relating to seismic risks would be **similar to P3**. Construction of the proposed P3 could damage paleontological resources at the site, if such resources are present in sedimentary materials underlying the site. Because the No-Project Alternative involves no excavations or construction, **no impact** on paleontological resources could occur. No geological or mineralogical resources are identified on the site that could be impacted by any alternative. Under variable conditions and due to its coastal location, the proposed P3 could be at risk for inundation by tsunami. Under the proposed project, this impact is potentially significant. Under the No-Project Alternative, the risk of inundation by tsunami would be the **same as P3**.

Hazardous Materials Management

Continued compliance with LORS relating to hazardous materials management would be required under the No-Project Alternative during the remaining years of operation of Units 1 and 2. During the shut down, all hazardous materials would be taken off site according to all applicable LORS. There would be no potentially significant impacts on the public or environment resulting from the No-Project Alternative. Compared to the proposed P3, hazardous materials management impacts are generally **less than P3**.

Noise and Vibration

The No-Project Alternative would cause no construction noise. Under the No-Project Alternative there would be no operational noise associated with operation of Units 1 and 2 after 2020. Therefore, compared to the proposed P3, **no impact** would occur under the No-Project Alternative.

Public Health

Under the No-Project Alternative, there would be no emissions of toxic air contaminants (TACs) from the existing MGS Units 1 and 2 after 2020. It is assumed that Units 1 and 2 would be closed and decommissioned and the structures would remain nonoperational on the site. No heavy construction equipment would be required (e.g., cranes); however, staff assumes that a negligible level of toxic air emissions would result from operation of equipment required to close and secure the facility. Construction-related diesel particulate matter emissions would be negligible. The MGS Unit 3 would continue to be operated as a permitted air emissions unit, and its continued operation is not part of the proposed P3 or the comparative impacts of the alternatives. For project operations-related toxic air contaminants, **no impact** on public health would occur following shut down of Units 1 and 2 under the No-Project Alternative.

Socioeconomics

Under the No-Project Alternative, shut down and decommissioning activities would require a few workers who would likely be supplied by the existing MGS operations workforce. As a result, the No-Project Alternative would not induce substantial population growth, induce substantial increases in demand for parks or police protection services, or displace substantial numbers of people and/or existing housing, necessitating the construction of replacement housing elsewhere. Shut down activities would not have impacts relating to socioeconomics; therefore, **no impact** would occur.

The estimated fiscal benefits of the proposed P3 would not be realized under the No-Project Alternative.

Soil and Water Resources

Water Quality Impacts from Construction and Demolition

Because the No-Project Alternative would not include any construction or demolition activities, **no impact** would occur.

Potential Impacts from On-site and Off-site Flooding

On-site flooding impacts could occur if construction of a project substantially altered the existing drainage patterns of the site (due to site grading, increasing impervious surfaces, or placing the project in a location that would alter the course of a stream or river). The No-Project Alternative would not involve construction of new structures, paving of surfaces, or site grading. None of the work to decommission MGS Units 1 and 2 would have the potential to cause off-site flooding. Therefore, **no impact** would occur.

Potential Flooding Hazard Based on Federal Emergency Management Agency Floodplain Delineation Maps

Flooding hazard is determined by project location. The No-Project Alternative would not involve project construction at the existing site. The potential for flooding hazard at the site would be exactly the **same as P3**, and the impact is less than significant.

Water Quality Impacts from Wastewater Discharge

Decommissioning of MGS would prepare Units 1 and 2 for complete shut down and bring the site to a safe and stable condition. Wastewater could be generated from the process of purging oil and other liquids from equipment for long-term dormancy. Wastewater that is not properly disposed could potentially contaminate groundwater through soil infiltration, as well as a nearby water body through direct discharge or contact runoff.

The MGS wastewater and septic systems would continue operating after Units 1 and 2 are shut down and Unit 3 continues to operate. Therefore, disposal of wastewater generated during decommissioning activities would follow existing MGS discharge permits. Discharges of hazardous or toxic materials into the wastewater and septic systems are prohibited. These discharges would be disposed off-site to the appropriate licensed facility in accordance with applicable LORS. Because the No-Project Alternative would not have a new power plant generating wastewater, and MGS decommissioning would use existing permitted wastewater systems, wastewater discharge impacts would be **less than P3**, and the impact conclusion is less than significant.

Water Quality Impacts from Power Plant Operations

Because MGS decommissioning activities are included in both the proposed P3 project and the No-Project Alternative, associated impacts on water quality would be the same for both situations and potential impacts would be mitigated to less than significant. Although the No-Project Alternative would not have any impacts associated with a new power plant, P3 would mitigate these impacts to less than significant through LORS compliance. Therefore, the overall impacts on water quality would be mitigated to less than significant for both situations, meaning impacts under the No-Project Alternative would be the **same as P3**.

Potential Impacts on Potable Water Supplies

Staff determined that the proposed P3 would have no impact on potable water supplies. For the No-Project Alternative, total water use over the 3-month decommissioning period would be minimal (approximately 0.3 acre-feet). Compared to the proposed project, the No-Project Alternative would also have **no impact** on potable water supplies.

Traffic and Transportation

For all potential roadway traffic related impacts, decommissioning of MGS Units 1 and 2 would not be expected to generate additional traffic greater than existing conditions. An estimated nine members of the existing MGS workforce would perform the work intermittently over 3 months while overseen by P3 staff, and no heavy construction equipment would be required. A small workforce would disconnect electrical components. Truck trips would likely be limited to those needed for removal of hazardous materials. Potential impacts relating to traffic level of service (LOS) would be less than significant, and no mitigation measures would be needed. Therefore, temporary impacts on traffic LOS from the No-Project Alternative would be **less than P3** and less than significant. Similarly, impacts relating to driver safety and damage to roads and bridges would be **less than P3** and less than significant.

For potential project operations roadway traffic impacts, the No-Project Alternative would include intermittent trips to operate and maintain systems (such as the storm drainage system) as required for environmental permit compliance. These trips would be extremely minimal. Therefore, permanent impacts on traffic LOS relating to operations and maintenance under the No-Project Alternative would be **less than P3** and less than significant.

Under the No-Project Alternative and the proposed P3, MGS Units 1 and 2 could operate until the end of 2020. MGS Units 1 and 2, which are natural gas-fired, might generate thermal plumes that could be hazardous to aircraft passing directly overhead. Staff has no data on these plumes. The Energy Commission did not license these units and has no regulatory authority over existing MGS operations. Hypothetically, any plume hazards from the MGS units could be mitigated to less than significant by adding a remark to applicable Federal Aviation Administration (FAA) aviation maps and documents and by issuing a Notice to Airmen warning pilots to avoid overflight of the MGS.

Operation of P3 would add an additional thermal plume to the area. Staff calculated that P3's thermal plume would have a velocity of 4.3 meters per second or more, one of the thresholds of significance used to determine hazards to aircraft, at heights up to approximately 4,260 feet above ground level. The velocity of P3's thermal plume remains high at much greater altitudes than for other gas-fired power plants reviewed by the Energy Commission. Pilot safety impacts from the No-Project Alternative, which would include potential plumes from MGS Units 1 and 2 until 2020, would be **less than P3**. The comparative impact conclusion is indeterminate because staff does not have plume data for MGS Units 1 and 2.

Transmission Line Safety and Nuisance

Staff analyzed the potential for field and non-field impacts from the physical presence of the existing SCE 220-kV line and the interactive effects of the generated electric and magnetic fields. These impacts are discussed in the **Transmission Line Safety and Nuisance** section of this staff assessment in terms of aviation safety, interference with radio-frequency communication, audible noise, fire hazards, hazardous shocks, nuisance shocks, and electric and magnetic field (EMF) exposure. Staff's four recommended conditions of certification of this staff assessment would reduce potential impacts to less than significant.

The proposed P3 would require one single-circuit 220-kV transmission line to connect to the SCE transmission switchyard adjacent to the MGS site. It would use one of the breaker positions that will be vacated when the existing MGS Units 1 and 2 are retired. The 220-kV single circuit would be designed and constructed to comply with the requirements of CPUC's General Order (GO) 95, "Rules for Overhead Line Construction," and other applicable state and local codes.

At 262 net MWs, the P3's generating capacity would be less than the 430 net MWs for the existing MGS Units 1 and 2, meaning that there would be a net reduction in power and current flowing in the transmission lines exiting the power plant site. Since the power lines would be operated at 220-kV whether with P3 or the existing MGS Units 1 and 2, the resulting electric fields and related impacts would remain the same. Only the magnetic fields would be reduced with P3 operation, since it is the only field component that directly depends on current levels.

Under the No-Project Alternative, there would be no operation of MGS Units 1 and 2 after 2020. Therefore, because no electricity generation would occur to replace those operating units, there would be **no impacts** pertaining to transmission line safety and nuisance.

Visual Resources

Under the No-Project Alternative, MGS Units 1 and 2 would be shut down and decommissioned but would remain nonoperational on the site. No on-site demolition or construction would occur, and MGS Unit 3 would continue operating.

Staff concludes that the proposed P3 would have less-than-significant impacts relating to its potential to adversely impact a scenic vista or scenic resources of a state scenic highway. Under the No-Project Alternative, these impacts are the **same as P3**.

The baseline condition for the visual analysis includes the existing MGS Units 1 and 2; therefore, visual impacts were assessed, in part, by evaluating changes in the visual environment that would occur under the proposed P3 compared to the baseline conditions for visual resources with the MGS Units 1 and 2 on the site. For each of the key observation points (KOPs) selected for analysis, staff evaluated the potential for the proposed project to substantially degrade the existing visual character or quality of the site and its surroundings (see the **Visual Resources** section of this staff assessment).

For KOPs 1, 4, and 5, staff identified less-than-significant impacts on visual resources for this criterion. Under the No-Project Alternative, these impacts are **similar to P3** and less than significant.

For KOP 2, staff identified a less-than-significant impact relating to the proposed project's potential to substantially degrade the existing visual character or quality of the site and its surroundings. Under the No-Project Alternative, the Energy Commission would have no discretionary authority regarding future use or management of the MGS site. Decommissioned power plant structures could deteriorate and potentially create a greater aesthetic nuisance from viewpoints at Mandalay State Beach, McGrath State Beach and other more distant areas within the project's viewshed. Under the No-Project Alternative, the substantial degradation of the existing visual character or quality of the site and its surroundings would be **greater than P3** at KOP 2, and the impact would remain potentially significant and unavoidable.

Staff identified a potentially significant impact at KOP 3 under the proposed project. Staff recommends Condition of Certification **VIS-1** requiring preparation and implementation of a surface treatment plan for project buildings, structures, and equipment. Under the No-Project Alternative, the Energy Commission would have no discretionary authority to implement conditions or measures to reduce the impact, or ameliorate long-term deterioration of decommissioned power plant structures that are visible from public use areas. Under the No-Project Alternative, the substantial degradation of the existing visual character or quality of the site and its surroundings would be **greater than P3** at KOP 3, and the impact would remain significant and unavoidable.

Staff has identified a potentially significant impact pertaining to a new source of substantial light or glare adversely affecting day or nighttime views in the area in the vicinity of the proposed P3. Staff recommends Condition of Certification **VIS-3** requiring preparation and implementation of a permanent exterior lighting management plan. Lighting of the decommissioned MGS structures would presumably be needed for safety and security purposes. Under the No-Project Alternative, the Energy Commission would have no discretionary authority regarding future use or management of the MGS site's permanent exterior lighting and glare. Staff considers the potential impacts from light and glare under the No-Project Alternative to be **indeterminate**.

Waste Management

LORS are enforced at the local level to ensure recycling and safe disposal of solid and hazardous waste, and these LORS would apply also to wastes generated under the No-Project Alternative (see the **Waste Management** section of this staff assessment for a discussion of applicable LORS). No mitigation measures beyond LORS compliance would be required for waste disposal under the No-Project Alternative.

Because there would be no waste generated from construction and operation of a new facility, the potential for project materials to have an effect on waste disposal or diversion facilities is **less than P3**. Due to the significant reduction in waste quantities

generated under the No-Project Alternative, **no impact** would occur compared to the proposed P3.

Staff considered potential site contamination as a factor for determining impacts from the No-Project Alternative. Since there would be no ground disturbance from the No-Project Alternative, there would be no potential impact on human health and the environment from existing site contamination. Although LORS compliance would be required for remediation of site contamination for construction and operation of P3, the potential impacts on human health and the environment would be **less than P3**. Based on staff's analysis, overall impacts pertaining to waste management under the No-Project Alternative would be **less than P3**.

Worker Safety and Fire Protection

Continued compliance with LORS relating to worker safety and fire protection would be required under the No-Project Alternative during the remaining years of operation of Units 1 and 2. Once shut down of the facility was started, all of the on-site fire suppression systems would remain in operation pursuant to applicable LORS. There would be no potentially significant impacts on the public or environment resulting from the No-Project Alternative, and potential impacts on worker safety and fire protection are **less than P3**.

DEL NORTE/FIFTH STREET OFF-SITE ALTERNATIVE

Staff evaluated the potential environmental impacts of developing a project similar to the proposed P3, including ancillary buildings and other structures, and two retention basins to collect storm water and process wastewater on an approximately 12.5-acre site in an industrial area in the eastern portion of Oxnard. The site address is 390 S. Del Norte Boulevard near the intersection with E. Fifth Street (State Highway 34) (**Alternatives Figure 2**). Both roadways are major travel corridors (City of Oxnard 2006). The Union Pacific Railroad freight line parallels E. Fifth Street along the southern boundary of the site with an at-grade controlled crossing at S. Del Norte Boulevard. This rail line also provides Amtrak and Metrolink passenger service. The site is located approximately 7 miles east of the coastline and 5 miles inland from the Coastal Zone boundary.

The approximately 12.5-acre site being evaluated under this alternative is located on the south half of an approximately 25-acre parcel with Assessor Parcel Number (APN) 2160160295. A concrete batch plant (i.e., asphalt recycling business) and possibly another industrial-type use are located on the south half of the parcel. The north half of the parcel is in agricultural use and is not being evaluated as part of this alternative. The property west of the site includes vacant land and a regional recycling facility. The vacant property may be developed as a biowaste-to-energy conversion center for organic material. An oil refinery is located on the property south of the site across State Highway 34. Areas east and north of the site include industrial, agricultural, and warehouse commercial uses. The property line along the site's east side coincides with the city boundary.

A single-family residence is located on Sturgis Road one-quarter mile northeast of the approximate center point of the site. The closest residential neighborhood is located approximately 1.25 miles west/northwest of the site.

A 30- to 36-inch diameter natural gas pipeline parallels S. Rice Avenue approximately 1 mile west of the site (see **Alternatives Figure 1b**). Providing natural gas to the site would likely require constructing a natural gas pipeline along E. Fifth Street to connect to the existing pipeline. The city's eastern trunk sewer line parallels S. Del Norte Boulevard along the west side of the site (City of Oxnard 2006). Like the proposed P3, total estimated water use would be approximately 16 acre-feet per year. Oxnard's water distribution system shows a water pipeline paralleling Sturgis Road approximately 970 feet north of the site's north boundary (City of Oxnard 2006).

This alternative would require construction of an on-site power plant switchyard. Connecting the switchyard to the closest substation (Ormond Beach or Mandalay) would require installing transmission structures and an overhead 220-kV transmission line along an approximate 6- to 8-mile-long linear alignment. Although it could be feasible for segments of the transmission line to be installed along or within existing rights-of-way (ROWs), a potential route for the transmission line under this alternative is unknown.

Land uses in the areas between this off-site alternative and each of the two substations include agricultural, industrial, and residential uses. Construction and installation of the transmission line could cause temporary impacts on air quality, noise, traffic, and water quality. Construction-related impacts could also affect biological resources. Depending on the types and sensitivity of nearby land uses, a new transmission line could require analyses of potential impacts relating to visual resources and transmission line nuisances. Construction-related impacts would be reduced to less than significant with implementation of mitigation measures or by avoiding sensitive resources. Potential specific impacts relating to transmission line installation are indeterminate for this off-site alternative (e.g., impacts on visual resources).

Land Use Planning

To determine potential consistency of the Del Norte/Fifth Street Off-site Alternative with land use LORS, staff reviewed the 2030 Oxnard General Plan. The site is designated by the General Plan as Heavy Industrial (IH), which allows industrial uses that are primarily outdoor and/or within specialized structures that may involve transportation, storage, or use of hazardous materials. Public services are permitted under the IH land use designation (City of Oxnard 2011). Goal ICS-17 (Infrastructure & Community Services) of the General Plan addresses providing adequate and efficient public utilities (including electric facilities) that meet the needs of the residents of Oxnard.

This alternative site is not located within the Coastal Zone and would not be subject to review of potential impacts on coastal resources. The zoning designation for this alternative site is Light Manufacturing Planned Development (M1-PD). The Light Manufacturing zone district (M1) allows wholesaling, manufacturing, processing, fabrication, public/private service uses and other similar uses the planning and

environmental services manager finds to be consistent with the purpose and intent of this zone. Public services uses permitted in the M1 zone include electrical transmission and distribution substations and public utility service yards with incidental buildings. The Planned Development Additive zone district (PD) is intended to ensure the orderly development of land in conformance with the General Plan and to permit departures from the restrictions imposed within the basic zones.

A newly proposed power generation facility in the M1-PD zone district would normally require a conditional use permit. To approve a power generation facility at this alternative site, Energy Commission staff would have to determine that the proposed use is in conformance with the General Plan and other adopted standards. Special conditions that would be considered by staff and potentially imposed on the project could include the following (verbatim from Section 16-531 of the Oxnard Zoning Code addressing requirements for granting a special use permit):

- The nature, condition and development of adjacent uses, buildings and structures shall be considered, and no proposed special use permit shall be granted if the approval body finds such use will adversely affect or be materially detrimental to such adjacent uses, buildings or structures or to the public health, safety or general welfare.
- The site that is subject to the special use permit shall be adequate in size and shape to accommodate the yards, walls, fences, parking and loading facilities, landscaping and other items which may be required.
- The site that is subject to the special use permit shall be served by highways adequate in width and improved as necessary to carry the kind and quantity of traffic such use would generate.
- The site that is subject to the special use permit shall be provided with adequate sewage, water, fire protection and storm drainage facilities.

Although the Energy Commission would have in lieu permitting authority for an electric generating facility at the Del Norte/Fifth Street Off-site Alternative, section 25506 of the Warren-Alquist Act requires the Energy Commission to request comments and recommendations from appropriate government agencies (e.g., a local municipality) regarding the design, operation, and location of the facilities in relation to environmental quality, public health and safety, and other factors on which an agency may have expertise.

The Del Norte/Fifth Street Off-site Alternative could be designed to be consistent with applicable land use LORS. City of Oxnard planning staff has presented the site as a suitable alternative site for the project (City of Oxnard 2015b).

Similar to the No-Project Alternative, under the Del Norte/Fifth Street Off-site Alternative, the existing MGS Units 1 and 2 would remain nonoperational on the MGS power plant site and would not necessarily be demolished and removed from the site following their decommissioning. In the absence of a license from the Energy Commission for a power plant at the MGS site, the Commission would have no authority

over the site and proposed future uses of the MGS power plant site would be subject to review and approval of a coastal development permit by the City.

Demographic Screening

Similar to staff's analysis for the proposed project, staff considered the potential impacts on the EJ population residing within 6 miles of the Del Norte/Fifth Street Off-site Alternative.

The **Executive Summary** at the beginning of this staff assessment discusses California's state policy requirements for decision-makers to consider EJ if their actions could cause impacts on the environment (see the subsection, "Environmental Justice"). The **Socioeconomics** section explains the demographic screening methodology used to determine the presence of an EJ population. Staff identifies an EJ population when one or more U.S. Census blocks in the 6-mile radius have a minority population greater than or equal to 50 percent. **Socioeconomics Figure 1** (in the "Socioeconomics" section of this staff assessment) identifies the minority population within the proposed P3's 6-mile radius. **Socioeconomics Table 3** shows the populations living below the poverty level. Together, the figure and table characterize the EJ population for the proposed project.

Minority Populations

Alternatives Figure 3 (using a 1-, 3-, and 6-mile radius) shows that the population residing in the area of the Del Norte/Fifth Street Off-site Alternative constitutes an EJ population based on race and ethnicity as defined by the federal guidance document, *Environmental Justice: Guidance Under the National Environmental Policy Act* (Council on Environmental Quality 1997).

Populations Below Poverty Level

Staff used the cities of Camarillo, Oxnard, and Port Hueneme to determine the relative poverty levels within the 6-mile radius and the county as the reference geography. **Alternatives Table 2** shows the percentages of population living below the federal poverty level in the 6-mile radius and the comparative data for the county. Staff concludes that when compared to the poverty data for the county, the cities of Oxnard and Port Hueneme have higher percentages of people living below the poverty level than the county and thus are considered EJ populations based on poverty.

Alternatives Table 2
Poverty Data within the Del Norte/Fifth Street Off-site Alternative Area

	Total Population (see note)	Population Below Poverty Level	Percent Below Poverty Level (%)
	Estimate	Estimate	Estimate
Cities in a 6-mile Radius			
Camarillo	65,353 ± 210	3,616 ± 682	5.50 ± 1.0
Oxnard	200,076 ± 394	31,956 ± 2,320	16.00 ±1.2
Port Hueneme	21,020	3,848	18.30

Alternatives Table 2
Poverty Data within the Del Norte/Fifth Street Off-site Alternative Area

	Total Population (see note)	Population Below Poverty Level	Percent Below Poverty Level (%)
	Estimate	Estimate	Estimate
	± 310	± 838	± 4
Reference Geography			
Ventura County	824,329 ± 959	91,912 ± 3,350	11.10 ± 0.4

Note: Population for whom poverty is determined.
Staff's analysis of the 2010–2014 estimates returned coefficient of variation values less than 15, indicating the data is reliable.
Source: U.S. Census 2015

Additional Environmental Justice Population Considerations

Cultural Resources staff has specific obligations to consult with tribal entities regarding potential impacts on resources used by Native Americans. A summary of Energy Commission tribal consultation efforts is provided in the **Cultural Resources** section of this staff assessment. It is not known whether Native Americans use any resources for current hunting and gathering activities within 6 miles of this alternative site. Therefore, impacts on cultural resources-related EJ populations are indeterminate.

Conclusion

Staff recommends conditions of certification to reduce potential environmental impacts of the proposed P3 relating to Air Quality, Hazardous Materials Management, Noise and Vibration, Soil and Water Resources, Traffic and Transportation, Transmission Line Safety and Nuisance, and Waste Management. With implementation of similar mitigation measures, potentially significant environmental impacts of the Del Norte/Fifth Street Off-site Alternative on populations in the area of this off-site alternative, including the EJ population, could be reduced to less than significant. Public Health and Socioeconomics staff concludes that the project impacts relating to their technical areas would be less than significant and therefore would have less-than-significant impacts on populations in a 6-mile radius of the Del Norte/Fifth Street Off-site Alternative, including the EJ population.

Visual Resources staff identified a potentially significant and unavoidable impact at KOP 3. The Del Norte/Fifth Street Off-site Alternative does not assume demolition or removal of MGS Units 1 and 2, thus leaving the units to possibly deteriorate visually, which could create a greater visual impact from viewpoints at public use areas within the viewshed of MGS Units 1 and 2. Without measures imposed to reduce potentially significant visual resources impacts to less than significant, the impacts at KOPs 2 and 3 (viewpoints closest to the MGS site) could remain significant and unavoidable. These visual impacts could similarly affect viewers in inland areas with unobstructed views of the existing MGS, including the area's EJ population.

In the event that a future land use agreement or property division or sale included removal of some of the existing power block structures and infrastructure, the visual

resources impacts from the existing MGS Unit 1 and 2 power block structures remaining on the site would not persist.

Potential to Attain the Project Objectives

The applicant's project objectives specify developing a 262-MW natural gas-fired power plant at the MGS site and fulfilling its 20-year agreement with SCE (NRG 2015a). As discussed above, the CPUC issued its final decision approving most of SCE's energy resource contracts for the Moorpark sub-area, including a contract with NRG for a 262-MW natural gas-fired peaker facility at the P3 site (the proposed project). The applicant includes a project objective to design, permit, build, and commission the P3 by June 2020. The CPUC's Track 1 decision addresses procurement of resources to replace retiring OTC generators and meet LCR needs by 2021. An alternative site in the Moorpark sub-area could, in theory, provide a location to develop a project similar to the P3. However, it is unknown whether NRG could obtain site control and complete environmental review and licensing to have a project built and commissioned at the Del Norte/Fifth Street alternative site by 2020 or 2021 to meet LCR needs.

If construction and operation of the Del Norte/Fifth Street Off-site Alternative was feasible, this alternative could potentially satisfy four of the applicant's eight project objectives:

- Provide an efficient, reliable, and predictable power supply by using a simple-cycle, natural gas-fired combustion turbine to replace the existing OTC generation;
- Support the local capacity requirements of the CAISO's Big Creek/Ventura local capacity reliability area;
- Develop a 262-MW nominal net 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 electrical grid; and
- Site the project on property that has an industrial land use designation with consistent zoning.

This off-site alternative could be designed and built to safely produce electricity; however, staff has determined that high velocity thermal plumes could cause significant and unavoidable impacts on pilot and aircraft safety due to the site's location near Camarillo Airport and the potential for transmission structures to exceed the minimum height threshold (see the discussions below under the subsection, "Traffic and Transportation, "and "Transmission Line Safety and Nuisance." for this alternative). This off-site alternative might not meet the project objective to safely produce electricity without creating a significant environmental impact.

Potential Feasibility Issues

Addressing feasibility of an alternative takes into account several factors, including whether the project proponent can reasonably acquire, control, or otherwise have access to the alternative site (Cal. Code Regs., tit. 14, § 15126.6, subd. (f)(1)). The P3 project owner does not have control of the Del Norte/Fifth Street Off-site Alternative site,

which is owned by Todd Industrial Park, LLC (NRG 2015b). Developing a project similar to the P3 at this site would require NRG to negotiate a property purchase or lease agreement with the owner. Depending on the outcome of such a negotiation, project viability could be affected.

Another factor affecting feasibility of an alternative addresses availability of infrastructure. Constructing and operating a project similar to P3 at the Del Norte/Fifth Street Off-site Alternative site would require a new power plant design proposal for the site with plans and analyses for off-site utility connections. This off-site alternative would require constructing an on-site power plant switchyard and transmission line connection to SCE's Mandalay Substation next to the MGS site or the Ormond Beach Substation next to the Ormond Beach Generating Station. Although connecting at the Mandalay Substation would require constructing a 7- to 8-mile-long transmission line, the interconnection point would be the same as is planned for the proposed P3. With the planned retirement of 430 MWs of generating capacity at the MGS, connecting this off-site alternative to an existing 220-kV breaker position at the Mandalay Substation would not cause "downstream" impacts on the transmission grid. In other words, the connection would not cause significant transmission impacts beyond the first point of interconnection with the existing grid.

The possible retirement of 1,500 MWs of generating capacity at the Ormond Beach Generating Station could allow the Del Norte/Fifth Street Off-site Alternative to interconnect with the grid at the Ormond Beach Substation without causing "downstream" impacts on the transmission grid. This interconnection scenario would entail constructing a 6- to 7-mile-long transmission line from the alternative site to the substation.

Either of these interconnection scenarios would require additional planning and analysis to identify a linear route and possible ROW for the new transmission line. The work to gain site control of the Del Norte/Fifth Street Off-site Alternative and plan its grid interconnection would delay the project and could affect its viability as an alternative.

Environmental Analysis

Alternatives Table 3 presents a summary comparison of impacts of the proposed P3 to the same or similar potential impacts of the Del Norte/Fifth Street Off-site Alternative. Comparative discussions for each environmental topic area follow the table.

Alternatives Table 3
Summary Comparison of Impacts of the Proposed P3
to the Del Norte/Fifth Street Off-site Alternative

Environmental Effect	Proposed P3	Del Norte/Fifth Street Off-site Alternative
Air Quality		
Construction and demolition-related emissions	PSM	Similar to P3 (PSM)
Project operations emissions	PSM	Similar to P3 (PSM)
Greenhouse Gases (construction- and demolition-related impacts)	PSM	Similar to P3 (PSM)

Alternatives Table 3
Summary Comparison of Impacts of the Proposed P3 to the Del Norte/Fifth Street Off-site Alternative

Environmental Effect	Proposed P3	Del Norte/Fifth Street Off-site Alternative
Biological Resources		
Project construction and demolition impacts		
Impact on jurisdictional wetlands and other waters	SM	Indeterminate
Impacts on common vegetation species	LS	Similar to P3 (LS)
Impacts on common wildlife species	LS	Similar to P3 (LS)
Impact of noise on nesting birds	PSM	Less than P3 (PSM)
Impacts on special-status plants and habitat	PSM	Less than P3 (LS)
Impacts on special-status wildlife *(see note)*	PSM	Less than P3 (PSM)
Impacts on special-status birds with MGS Units 1 and 2 left on site	—	Greater than P3 (PSU)
Impacts of dust, nighttime lighting, and invasive weeds on biological resources	PSM	Less than P3 (PSM)
Biological resources note: excluding nesting birds		
Project operations impacts		
Impacts on biological resources relating to nitrogen deposition	LS	—
Impact relating to potential electrocution of avian species	PSM	Similar to P3 (PSM)
Cultural Resources		
Impacts on surficial archaeological and ethnographic resources	—	Indeterminate
Impacts on buried archaeological resources	PSM	Indeterminate
Impacts on built environment resources	—	Indeterminate
Geology and Paleontology		
Risk of damage to paleontological resources	PSM	Similar to P3 (PSM)
Potential impacts on geological or mineralogical resources	—	—
Risk of surface fault rupture	LS	Similar to P3 (LS)
Risk of liquefaction, dynamic compaction, and lateral spread from strong seismic shaking	PSM	Similar to P3 (PSM)
Risk of potential excessive settlement or expansion of soils causing an impact on structures	PSM	Similar to P3 (PSM)
Risk of inundation by tsunami resulting from an earthquake or local submarine landslide	PSM	—
Hazardous Materials Management		
Risk of fire or explosion off-site from natural gas usage during project operation	PSM	Same as P3 (PSM)
Risk of hazardous materials spill impact en route (off-site) from hazardous materials transport to the project site	PSM	Same as P3 (PSM)
Risk of hazardous materials spill or migration off-site from hazardous materials storage and use on-site	PSM	Same as P3 (PSM)
Risk of significant drawdown of emergency response services causing off-site impact	LS	Same as P3 (LS)
Noise and Vibration		
Potential noise impacts at noise-sensitive locations	PSM	Greater than P3 (PSM)
Public Health		

Alternatives Table 3
Summary Comparison of Impacts of the Proposed P3 to the Del Norte/Fifth Street Off-site Alternative

Environmental Effect	Proposed P3	Del Norte/Fifth Street Off-site Alternative
Construction-related diesel particulate matter (DPM) emissions	LS	Similar to P3 (LS)
Project operations-related toxic air contaminants (TACs) emissions	LS	Similar to P3 (LS)
Socioeconomics		
Induce substantial population growth in an area, either directly or indirectly	LS	Similar to P3 (LS)
Displace substantial numbers of people and/or existing housing, necessitating the construction of replacement housing elsewhere	LS	Similar to P3 (LS)
Adversely impact acceptable levels of service for police protection, schools, and parks and recreation	LS	Similar to P3 (LS)
Increased property taxes, construction and operation employment income, and increased state and local taxes and fees	B	Similar to P3 (B)
Soil and Water Resources		
Water quality impacts during project construction	PSM	Similar to P3 (PSM)
Water quality impacts during demolition	PSM	Less than P3 (PSM)
Potential impacts from on-site and off-site flooding	PSM	Indeterminate
Potential flooding hazard based on Federal Emergency Management Agency floodplain delineation maps *(see note)*	LS	Same as P3 (LS)
Water quality impacts from wastewater discharge	SM	Similar to P3 (SM)
Water quality impacts from power plant operations	PSM	Similar to P3 (PSM)
Potential impacts on potable water supplies	—	—
Water resources note: Based on current FEMA mapping effective 2010. May change when updated map is released in 2016.		
Traffic and Transportation		
Potential impacts from increased construction workforce traffic that is substantial compared to the existing traffic load and capacity of the street system	PSM	Less than or similar to P3 (PSM)
Potential for increased workforce traffic to cause driver safety impacts during project demolition and/or construction	PSM	Less than or similar to P3 (PSM)
Potential for increased workforce traffic to damage roads and bridges during project demolition and/or construction	PSM	Less than P3 (PSM)
Potential impacts from increased traffic during project operation (i.e., post-construction traffic) that is substantial compared to the existing traffic load and capacity of the street system	LS	Similar to P3 (LS)
Potential impacts from thermal plumes on aircraft and pilot safety	PSM	Greater than P3 (SU)
Transmission Line Safety and Nuisance		
Impacts on aviation safety relating to location of transmission lines	LS	Greater than P3 (PSU)
Interference with radio-frequency communication	LS	Greater than P3 (PSM)
Potential for transmission lines to cause audible noise	LS	—
Potential fire hazards	PSM	Similar to P3 (PSM)
Potential for hazardous shocks	PSM	Similar to P3 (PSM)
Potential for nuisance shocks	PSM	Similar to P3 (PSM)
Potential for electric and magnetic (EMF) exposure	PSM	Greater than P3 (PSM)
Visual Resources		

Alternatives Table 3
Summary Comparison of Impacts of the Proposed P3
to the Del Norte/Fifth Street Off-site Alternative

Environmental Effect	Proposed P3	Del Norte/Fifth Street Off-site Alternative
Substantial adverse effect on a scenic vista	LS	Similar to P3 (LS)
Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway	LS	Similar to P3 (LS)
Substantially degrade the existing visual character or quality of the site and its surroundings *(see note)*	PSM	Less than or similar to P3 (PSM)
Impacts on visual resources with MGS Units 1 and 2 left on site	—	Greater than P3 (PSU)
Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area	PSM	Similar to P3 (PSM)
Visual resources note: Staff identifies a potentially significant impact at KOP 3, which is less than 1,000 feet from the P3 site. For the other KOPs, staff identifies less-than-significant impacts.		
Waste Management		
Potential for impacts on human health and the environment relating to waste discharges	PSM	Same as P3 (PSM)
Potential for disposal or diversion of project materials to cause impacts on existing waste disposal or diversion facilities	PSM	Similar to P3 (PSM)
Potential for impacts on human health and the environment relating to past or present soil or water contamination	PSM	Same as P3 (PSM)
Worker Safety and Fire Protection		
Risk of fire or explosion impact off-site resulting from natural gas usage during construction and operation	PSM	Same as P3 (PSM)
Risk of significant drawdown of emergency response services causing off-site impact	LS	Same as P3 (LS)

Air Quality

The Del Norte/Fifth Street Off-site Alternative is located in the same air basin as the proposed P3, the South Central Coast Air Basin. The proposed P3 and this off-site alternative are located in the same local air district, the Ventura County Air Pollution Control District (VCAPCD). The existing ambient air quality is the same for the alternative site and the proposed P3 site, and the same air quality LORS pertain to this off-site alternative.

Under the Del Norte/Fifth Street Off-site Alternative, approximately 262 MWs of natural gas-fired generation would be constructed and operated at the alternative site. The proposed P3 would not be constructed at the MGS site. Both construction- and operations-related impacts on air quality for this alternative would likely be **similar to P3**, and the same air quality rules and regulations would apply to the off-site alternative. Impacts relating to GHG emissions would also be **similar to P3**. Potentially significant impacts on air quality would be reduced to less than significant with implementation of the same mitigation measures as those proposed for P3.

Biological Resources

Staff attended a site visit in April 2016 and viewed the site from the fenced property boundary along E. Fifth Street and S. Del Norte Boulevard. A single on-site drainage ditch along the southern edge of the site is mapped as a riverine wetland by the National Wetland Inventory; however, staff observed during the site visit that this drainage ditch appears to be filled. Another natural bottom drainage ditch exists inside the northern third of the site, perpendicular to E. Fifth Street. The U.S. Fish and Wildlife Service has not designated or mapped critical habitat in the vicinity of this off-site alternative. The site is primarily developed for an industrial use; it is surrounded by vacant land and other industrial uses. Areas north and east of the site include agricultural uses. Overall, the site appears to be heavily graded and substantially disturbed.

The Del Norte/Fifth Street Off-site Alternative does not have the existing facilities present at the P3 site (i.e., retention basins and pads for other ancillary facilities). Additional construction would be required to install and operate a power plant at this alternative site. This off-site alternative would require a 6- to 8-mile-long transmission line to connect to a nearby substation. It would require construction of a new natural gas pipeline to an interconnection point approximately 1 mile west of the site. Biological surveys have not been performed along potential linear routes or at the alternative site; however, biological constraints appear low according to NRG's preliminary analysis of the site (NRG 2015b).

Construction and Demolition Impacts

Because this site appears to have long been disturbed and/or used for industrial purposes, on-site vegetation is primarily ruderal and/or ornamental, and its disturbance or removal would not likely cause a significant impact. The natural bottom drainage ditch across part of the north half of the site is approximately 250 feet long and could have been associated in the past with agricultural operations to the north and east. This feature may be considered a water of the state, pursuant to the Porter-Cologne Act and subject to regulation by the State Water Resources Control Board.

The Del Norte/Fifth Street Off-site Alternative covers approximately 12.5 acres. This off-site alternative would require more acreage for project construction compared to the proposed P3, and it is unknown whether a site plan could be devised that would avoid impacting the on-site drainage ditch. Construction of the natural gas pipeline would cross a vegetated canal approximately one-half mile west of the site. It is assumed that the pipeline could be installed using construction methods that allow placement under the canal, thus eliminating any potential impacts on waters of the state. Because a site configuration for the Del Norte/Fifth Street Off-site Alternative is not known, it is not possible to conclude whether a project at this site could be designed to avoid the potential waters of the state (i.e., the on-site drainage ditch). Therefore, staff concludes that the potential for this alternative to effect waters of the state is **indeterminate**. This alternative would avoid filling the Coastal Commission jurisdictional wetlands on the P3 site.

Similar to P3, development of a power plant at the Del Norte/Fifth Street Off-site Alternative would have less-than-significant impacts on common vegetation and wildlife species that could be present on the site. On-site habitat is degraded, and the general character of the area is either developed or in use for agricultural production. Special-status species (plants, habitat, and wildlife, but excluding nesting birds) have limited potential to occur on the site; a review of the California Natural Diversity Database revealed no documented occurrences of listed species on or near the alternative site. There is a low likelihood for special-status plants, animals, or habitat to be present in the developed and agricultural areas immediately surrounding the site. Staff concludes that potential impacts on these resources would be **less than P3**. For potential impacts on special-status wildlife during project construction, staff would require on-site biological monitors to reduce the impact to less than significant.

Construction of the proposed project would include demolishing the MGS Units 1 and 2. Under the Del Norte/Fifth Street Off-site Alternative, it is assumed that no license would be issued by the Energy Commission to construct and operate a power plant at the MGS site. Without a license from the Energy Commission, the existing MGS Units 1 and 2 would not necessarily be demolished and removed from the site following their decommissioning. Under this circumstance, MGS Units 1 and 2 would present potential nuisance nesting and perching opportunities for raptors and other predatory birds, which could lead to depredation of the federally endangered western snowy plover and California least tern nests on the dunes and beaches immediately northwest of the project site. Under this off-site alternative, impacts on special-status nesting birds would be **greater than P3**. Assuming mitigation measures were not imposed to reduce the impact to less than significant, the impact on special-status birds would remain potentially significant and unavoidable.

Construction activities at this alternative site would be similar to the proposed P3. This alternative would require installation of facilities and other site improvements that are already present at the MGS site. Although no power plant structures would need to be demolished and removed from the alternative site, various structures relating to the existing industrial uses would have to be cleared from the site. Compared to the proposed P3, staff assumes the same types of equipment would be used to prepare the alternative site and construct the power plant facilities.

Given the sparsely vegetated nature of the Del Norte/Fifth Street Off-site Alternative, and the fact that surrounding land uses are mostly agricultural and developed or vacant disturbed land, staff considers the site and surrounding areas to have limited nesting potential for birds. Common species such as house finches (*Carpodacus mexicanus*) and mourning dove (*Zenaida macroura*) may nest in neighboring trees or buildings. These species are known to acclimate to noises of human activities; therefore, impacts from construction and demolition noise could be reduced to less-than-significant with implementation of mitigation measures. Special-status species, including western snowy plover and California least tern nest on the beaches and dunes northwest of the project site, but not on the project site. Construction and demolition noise impacts on these species are considered potentially significant; these impacts can be reduced to less than significant with implementation of mitigation measures.

Given the intensively developed character of the Del Norte/Fifth Street Off-site Alternative, no special-status species are expected to be present on the site; therefore, noise impacts on nesting birds would be **less than P3**. These potentially significant impacts could be reduced to less than significant with implementation of mitigation measures.

General construction and demolition impacts relating to dust, nighttime lighting, and the potential to spread invasive weeds could occur at either site; however, there is no known sensitive habitat within a range of the Del Norte/Fifth Street Off-site Alternative where potential impacts on biological resources could occur. At the proposed P3 site, critical habitat and sensitive wetlands occur in the immediate vicinity of the site, whereas habitat adjacent to this off-site alternative does not appear to be sensitive. Therefore, general impacts on biological resources from construction and demolition activities are considered **less than P3**. These impacts could be reduced to less than significant with implementation of mitigation measures.

Project Operations Impacts

The proposed project would deposit less-than-significant levels of nitrogen oxides (NOx) at the closest sensitive habitats such as the dunes west of the site and wetland habitat surrounding McGrath Lake, immediately north of the proposed P3 site. The P3 site and vegetation within 1,000 feet of the site were mapped by the applicant and included in the AFC (NRG 2015a). While no similar mapping has occurred for this off-site alternative, staff's review of Google Earth imagery identified no other sensitive habitat within several miles of the site. Staff concludes there would be **no impacts** from nitrogen deposition at the Del Norte/Fifth Street Off-site Alternative.

This alternative would require installing an approximately 6- to 8-mile-long 220-kV transmission line, which could pose an electrocution hazard for large raptors if not constructed according to applicable guidelines, specifically the Avian Power Line Interaction Committee guidelines to protect raptors (Avian Power Line Interaction Committee 2006). This off-site alternative would be required to comply with the same guidelines to reduce potentially significant impacts on avian species to less than significant. Therefore, potential impacts on raptors from electrocution hazards would be **similar to P3**.

Cultural Resources

The Del Norte/Fifth Street Off-site Alternative is just north of the historic Southern Pacific (now Union Pacific) Montalvo Line. The line services freight as well as Amtrak and Metrolink passengers. The railroad tracks parallel Fifth Street (State Highway 34). According to historical imagery from Google Earth, the site was a tank farm in 1989. By 2006, the tank farm was mostly removed and a gravel/construction materials operation began on the site. A large area of the 12.5-acre site does not appear to be in use. A review of archival Google Earth imagery, circa 1989 to present, suggests that the northeast-east portion of the site has experienced less ground disturbance compared to the rest of the site.

Connecting to the closest substation (Ormond Beach or Mandalay) would require installing transmission structures and overhead lines along an approximate 6- to 8-mile-long linear alignment. Although it could be feasible for segments of the transmission line to be installed along or within existing rights-of-way (ROWs), the route for the transmission line under this alternative is unknown.

A 30- to 36-inch diameter natural gas pipeline is located approximately 1 mile west of the site. The gas line connection could possibly be aligned along or in the Fifth Street ROW, which could require excavation below the railroad tracks to reach Fifth Street and then excavation in the ROW to connect with the existing natural gas pipeline that parallels Rice Avenue.

The archaeological and ethnographic setting presented in **Cultural Resources Appendix A** of this staff assessment applies also to this alternative.

Impacts on Surficial Archaeological and Ethnographic Resources

A review of historic topographic maps, archival Google Earth imagery, and maps of ethnographic villages did not reveal any surficial archaeological resources or ethnographic resources. The 1949 and 1951 U.S. Geological Survey (USGS) 7.5 minute topographic maps show oil tanks on the north side of the railroad tracks, which were likely at this alternative site in the past but were removed sometime after 1951. However, this general examination is not sufficient to reach conclusions regarding the presence, or lack thereof, of surficial archaeological resources and ethnographic resources. Therefore, it is **indeterminate** if any surficial archaeological resources or ethnographic resources could be impacted at the site and how such an impact (if it occurred) would compare to the proposed P3 site where no impact is identified.

Impacts on Buried Archaeological Resources

The Del Norte/Fifth Street Off-site Alternative and the proposed P3 are both located on the large coastal alluvial fan of the Oxnard Plain. Alluvial fans are generally low-energy, depositional environments that often preserve intact archaeological deposits. Without more specific information regarding the geomorphological character of the site and previous cultural resources work near and at the site, potential impacts on buried archaeological resources are unknown but are more likely to be found in the less disturbed northeastern portion of the site. Therefore, it is **indeterminate** if any buried archaeological resources could be impacted at the site and how such an impact (if it occurred) would compare to the proposed P3 site where this impact is considered potentially significant but mitigable.

Impacts on built environment resources

No built environment resources of historic age have been identified at the Del Norte/Fifth Street Off-site Alternative or along pipeline routes. Although a transmission line route for this alternative would likely be located along existing ROWs to the extent feasible, a potential route is unknown, and staff has no survey data from which to draw conclusions. Without the benefit of survey information about the transmission and pipeline routes and the precise locations of the transmission towers and pipelines, staff

has insufficient information from which to draw conclusions on the potential for impacts on built environment resources to occur. It is unknown what potential impacts on the historic built environment could occur under the Del Norte/Fifth Street Off-site Alternative and whether impacts could be reduced to less-than-significant levels. Therefore, it is **indeterminate** if any built environment resources could be impacted under this alternative and how such an impact (if it occurred) would compare to the proposed P3 site where no impact is identified.

Conclusion

It is unknown if the Del Norte/Fifth Street Off-site Alternative would have the potential to cause impacts on surficial archaeological resources, buried archaeological resources, or known archaeological or ethnographic resources. Although no built environment resources of historic age are identified on the alternative site, it is unknown if impacts on built environment resources could occur due to the lack of survey data and unknown locations for constructing off-site linear facilities. Impacts on surficial archaeological resources, buried archaeological resources, known archaeological and ethnographic resources, and historic built environment resources from this off-site alternative are **indeterminate** compared to P3.

Geology and Paleontology

The Del Norte/Fifth Street Off-site Alternative is located approximately 7 miles east of the coastline and the proposed P3 site. Topography of the site appears to be generally flat and is underlain by sediments similar to the proposed P3 site. Land use in the site vicinity is largely industrial and agricultural. Under this alternative, ground disturbance would be somewhat greater than that required to construct the proposed P3; increased ground disturbance would occur during construction of foundations for transmission line structures and off-site trenching for natural gas and water pipelines.

Similar to P3, this alternative would have the potential to encounter and damage buried paleontological resources. Although the sedimentary materials underlying this off-site alternative have a limited potential to contain paleontological resources, if such resources are present, potential impacts could be significant. Implementation of a paleontological resources monitoring program such as the one described in the **Geology and Paleontology** section of this staff assessment would be required to reduce the impact to less than significant (see Conditions of Certification **PAL-1** through **PAL-8**). Staff concludes that the relative potential for paleontological resources to be damaged under this off-site alternative would be **similar to P3**.

Like the proposed P3, this alternative would have **no impact** on mineralogical or geological resources because these resources are not present at the site or in areas where construction of linear facilities would occur.

Similar to P3, there are no known active faults on the alternative site or crossing areas where linear facilities would be installed. The potential risk relating to surface fault rupture under this alternative is less than significant, and the impact conclusion is the same for the proposed P3 at the MGS site.

The Del Norte/Fifth Street Off-site Alternative would be subject to the same, very strong levels of earthquake-related ground shaking as the proposed P3. The potential risk of soil failure caused by liquefaction and/or dynamic compaction would be **similar to P3** for this off-site alternative. These potential impacts could be reduced to less than significant with implementation of a mitigation measure such as the one recommended in the **Geology and Paleontology** section of this staff assessment (see Condition of Certification **GEO-2**).

This off-site alternative is subject to a risk of potential excessive settlement or expansion of soils that would be **similar to P3**. These potential impacts could be reduced to less than significant with implementation of a mitigation measure similar to Condition of Certification **GEO-2**.

Under variable conditions and due to its coastal location, the proposed P3 could be at risk for inundation by tsunami. Under the proposed project, this impact is potentially significant. The Del Norte/Fifth Street Off-site Alternative is outside the coastal area that is subject to risk of inundation by tsunami; therefore, **no impact** would occur compared to the proposed project.

Hazardous Materials Management

The Del Norte/Fifth Street Off-site Alternative would present a nearly identical hazardous materials risk profile as at the proposed P3 site. Both would use natural gas as fuel and ammonia for selective-catalytic reduction of oxides of nitrogen in the combustion exhaust. Since the hazardous risk profiles are similar, the Del Norte/Fifth Street Off-site Alternative would present potentially significant impacts that could be mitigated to less than significant the **same as P3**.

Noise and Vibration

Staff evaluated the potential impacts of the proposed P3's construction and operational noise on the new, residential community that is planned for development approximately 2,620 feet southeast of the MGS site. The nearest noise-sensitive receptor to the Del Norte/Fifth Street site is a residence that is located on Sturgis Road, approximately 900 feet northeast of the center of this alternative site. Therefore, the construction and operational noise impact would be **greater than P3** for this off-site alternative. Additional mitigation measures would be needed to lower power plant noise at this off-site alternative and reduce the potentially significant impact to less than significant.

Public Health

Construction and operation of a 262-MW natural gas-fired, simple-cycle power plant at the Del Norte/Fifth Street Off-site Alternative would cause the same or similar impacts as P3. Under this alternative, construction of buildings and structures would include water storage tanks, retention basins, ammonia tanks, a 220-kV switchyard and transmission line, and administration and warehouse/lab buildings. This off-site alternative is located in the same air basin as the proposed P3, the South Central Coast Air Basin. The proposed P3 and this off-site alternative are located in the same local air district, the VCAPCD. The Del Norte/Fifth Street Off-site Alternative would be subject to

the same public health LORS as those that apply to the P3 site; a health risk assessment would be needed to ensure compliance with applicable LORS.

Construction-related impacts of Del Norte/Fifth Street Off-site Alternative would be generally **similar to P3**. Operations-related impacts would also be **similar to P3** because the same air emissions rules and regulations would apply at this off-site location. The impact conclusion for the proposed P3 and this off-site alternative is less than significant. The MGS Unit 3 would continue operations as a permitted unit.

Socioeconomics

Unlike the P3, the Del Norte/Fifth Street Off-site Alternative would require construction of a 6- to 8-mile-long transmission line, a new 1-mile section of natural gas pipeline, a new 220-kV switchyard, and two retention basins. This construction would require an additional workforce and would extend the construction schedule beyond what would be required under the proposed project. The additional workers and lengthened schedule would likely be minimal compared with the workforce needs and length of work for the proposed P3. Because this alternative does not include demolition of MGS Units 1 and 2, but requires new linear components, the workers needed and length of work would largely balance out. If any additional workforce was needed, it would be easily met with the large labor pool in the Oxnard-Thousand Oaks-Ventura Metropolitan Statistical Area (Ventura County MSA) and Los Angeles-Long Beach-Glendale Metropolitan District (Los Angeles MD).

In 2012, there were over 124,500 construction and extraction trades workers in the Ventura County MSA and Los Angeles MD combined, with projections for a workforce increase of almost 25 percent by 2022. There were approximately 1,500 electric power line installation and repair workers in 2012 in the Ventura MSA and Los Angeles MD, combined, and a projected growth of almost 15 percent by 2020.

With the ample workforce, there would be no substantial population growth or substantial increases in demand for parks or law enforcement services. This alternative would not displace substantial numbers of people or existing housing, necessitating the construction of replacement housing elsewhere. The impacts for this alternative would be less than significant and **similar to P3**.

Expenditures for additional equipment and construction labor necessary for construction at this alternative site would be slightly greater than those for P3. However, the estimated fiscal benefits of this alternative would be **similar to P3**.

Like the proposed P3, construction and operation of a power plant at this site would require Condition of Certification **SOCIO-2** to ensure payment of the one-time statutory school facility development fee to the Oxnard School District and to the Oxnard Union High School District and compliance with LORS.

Soil and Water Resources

The Del Norte/Fifth Street Off-site Alternative is located within the city limits of Oxnard, and it is serviced by Oxnard's potable water system and municipal wastewater system. Both the P3 site and this alternative site are in the jurisdictional region of the Los Angeles Regional Water Quality Control Board, but the Del Norte/Fifth Street Off-site Alternative is located within the Calleguas Creek Wastershed. The site is well inland, approximately 7 miles east of the ocean and roughly 6 miles south of the Santa Clara River. The Revolon Slough is about a mile east and the nearest water resource to this off-site alternative. Revolon Slough primarily contains storm water and agricultural runoff; it flows from north (in the Camarillo Hills) to south (into Mugu Lagoon) and drains to the ocean.

Connecting to the closest substation (Ormond Beach or Mandalay) would require installing transmission structures and a 220-kV transmission line along an approximate 6- to 8-mile-long linear alignment. The route for the transmission line under this alternative is unknown. This off-site alternative would require constructing a natural gas line large enough to accommodate a 262-MW power plant. Connecting to the 30- to 36-inch diameter natural gas line approximately 1 mile west of the site would require underground pipeline installation, likely along State Highway 34.

Water Quality Impacts during Project Construction

Staff assumes that the entire 12.5-acre site would require light grading for site preparation and construction laydown. Similar to the P3 site, excavation would occur to construct the reinforced concrete foundations for the power block, but the Del Norte/Fifth Street Off-site Alternative does not have the same coastal requirement for deep foundations such as piles to support the foundation. This off-site alternative also does not have the existing infrastructure found at the P3 site, so additional construction would be required for new administration and warehouse/lab buildings, pads for various ancillary facilities (water storage tanks, firewater pump, ammonia tanks, etc.), and two retention basins to collect stormwater and process wastewater. Trenching to install underground pipelines would take place on-site to connect to Oxnard's potable water and municipal wastewater systems, and off-site to connect to the natural gas line approximately 1 mile away.

Compared to the P3 site, construction activities at this alternative site could require more earth work and a longer construction timeframe. As with the P3 site, construction activities are subject to construction-related storm water permit requirements of the federal Clean Water Act's National Pollutant Discharge Elimination System (NPDES) permits, including California's General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit). Impacts on water quality would be minimized through compliance with the Construction General Permit and other applicable NPDES permits. Required implementation of specific best management practices (BMPs) for erosion control and wastewater management, in addition to numeric action levels (NALs) to evaluate the effectiveness of BMPs, would achieve minimum water quality standards. Although the larger construction area and longer construction time increases the potential for significant

impacts at the Del Norte/Fifth Street Off-site Alternative, these impacts would be reduced to less than significant, **similar to P3**.

Water Quality Impacts during Demolition

Approximately half of this off-site alternative is undeveloped and the other half is occupied by existing industrial land uses spread over two lots. A concrete batch plant is located on one lot, and the other (signage indicates it is a paint yard) contains a large warehouse/shop building and two smaller structures. Potential impacts due to demolition and removal activities are similar to potential impacts from construction activities: erosion and sedimentation of disturbed soil, contaminated water runoff, and improper management of wastewater.

Compared to the P3 site which proposes aboveground demolition of MGS Units 1 and 2, demolition activities at the Del Norte/Fifth Street Off-site Alternative would take much less time and produce significantly less demolition material. Therefore, impacts would be **less than P3**, but because both sites would be subject to requirements of the Construction General Permit, which also regulates demolition activities, impacts on water quality would be reduced to less than significant.

Potential Impacts from On-site and Off-site Flooding

Development at the Del Norte/Fifth Street Off-site Alternative would not impact the course of a stream or river. For on-site storm water drainage, a similar storm water collection system proposed at the P3 site (which covers about 15.3 acres, including the MGS site) could likely manage storm water at this 12.5-acre off-site alternative. However, a site-specific drainage study is needed to evaluate the adequacy of on-site drainage management. Therefore, it is **indeterminate** if development at this alternative site would cause significant flood impacts or how these potential impacts would compare to those of the proposed P3.

Potential Flooding Hazard Based on Federal Emergency Management Agency Floodplain Delineation Maps

The Federal Emergency Management Agency (FEMA) flood hazard map shows that a large storm event would likely cause the Revolon Slough to flood adjacent land. However, this off-site alternative is located a distance far enough to be outside both the 1 percent and 0.2 percent annual chance flood hazard (also referred as the 100- and 500-year event floodplain, respectively). In comparison, the P3 site is located just outside the mapped 100-year floodplain and the 500-year floodplain encroaches into the southwest corner of the proposed project site. Although this alternative site is well outside the 500-year floodplain, the Oxnard Plain is relatively flat with a remote chance of flooding. The site's less-than-significant impact of 1 percent annual chance flood hazard due to river flooding is comparable to the P3's less-than-significant impact of 1 percent annual chance flood hazard occurring from coastal flooding. Therefore, the potential flooding hazard is the **same as P3**, and the impact conclusion is less than significant.

Staff emphasizes that flood hazard analysis is based on official FEMA maps, which were last updated in 2010. FEMA is currently updating the flood hazard map for the Oxnard area, which could shift or otherwise change the shape and size of floodplains. The Final Staff Assessment (FSA) will include updated information if preliminary FEMA maps are available at that time.

Water Quality Impacts from Wastewater Discharge

The Del Norte/Fifth Street Off-site Alternative and the proposed P3 would use the same technology to achieve the same generating capacity. Therefore, the quantity and quality of generated wastewater are expected to be the same at both sites.

This off-site alternative is serviced by Oxnard's municipal wastewater system, which is expected to accept sanitary waste. Assuming the on-site system that manages process wastewater and storm water runoff can treat these flows to a water quality level acceptable to Oxnard, these flows would also discharge to the municipal wastewater system. Because the wastewater treatment plant is licensed and regulated under Waste Discharge Requirements (WDRs) issued by the Regional Water Quality Control Board (RWQCB), impacts would be reduced to less than significant.

Because the P3 site is not serviced by the municipal wastewater system, sanitary waste is managed through an existing septic system. Process wastewater and storm water runoff are managed through the existing MGS collection system for treatment prior to discharge into the ocean. Both of these existing systems are currently operating under project-specific WDRs issued by the RWQCB, which reduce impacts to less than significant.

Although the proposed method of wastewater disposal is different at each site, the discharge of both sites would be regulated under their respective WDR permits requiring that treatment meet minimum water quality standards. Because wastewater of this off-site alternative would discharge to the municipal wastewater system, impacts would be reduced to less than significant, **similar to P3**.

Water Quality Impacts from Power Plant Operations

Potential impacts on water quality at the Del Norte/Fifth Street Off-site Alternative would be less than P3 mainly due to its relative distance to water resources. Potential impacts on groundwater would also be less because this alternative would require an off-site connection to the municipal wastewater system. Despite a lower potential to impact water quality, this off-site alternative would need to comply with the same requirements imposed on P3 such as a hazardous materials management program, spill control and prevention, and other measures to avoid or reduce the discharge of contaminants. With these requirements implemented, potential impacts on water quality would be **similar to P3**.

Potential Impacts on Potable Water Supplies

This off-site alternative and the proposed P3 would use the same technology to achieve the same generating capacity, therefore, operational water use is expected to be equal.

Water use at this off-site alternative would constitute a new use (maximum 19 acre-feet per year), while the combination of the proposed development of P3 and MGS decommissioning would be a net reduction of current water use at the MGS facility. The City of Oxnard's "Water Neutrality Policy" requires that all new development offset its water demand. The decommissioning of MGS Units 1 and 2 could theoretically provide water to fully offset the new use at this off-site alternative. Therefore, **no impact** on water supply would occur.

Traffic and Transportation

Construction Workforce Traffic

The Del Norte/Fifth Street Off-site Alternative would involve construction of additional ancillary buildings and structures, a new 220-kV switchyard, and demolition of existing on-site structures. Construction workers would travel through an already congested area, State Highway 101 at N. Del Norte Boulevard, to access the site. According to the Ventura County Traffic Commission's Congestion Management Plan, traffic flow in this area drops to LOS F during commute hours (Ventura County Transportation Commission 2009). Furthermore, under this off-site alternative, some construction traffic would likely cross the signalized railroad crossing at S. Del Norte Boulevard, and train movements could contribute to traffic congestion.

As with the Del Norte/Fifth Street Off-site Alternative, the existing traffic flow along the route to P3 is congested, falling to LOS F at certain locations during certain times of the day. Although the Del Norte/Fifth Street Off-site Alternative would involve construction of additional buildings and structures and vehicular crossing of the railroad tracks, P3 could have greater construction-related traffic impacts due to the large number of temporary vehicle trips during demolition of MGS Units 1 and 2. However, this off-site alternative would also require demolition and removal of existing structures from the site. Staff concludes the Del Norte/Fifth Street Off-site Alternative's temporary construction-related impacts on traffic LOS would be **less than or similar to P3**. Traffic impacts under this alternative could be mitigated to less than significant by implementing a traffic control plan and obtaining applicable encroachment permits.

Driver Safety

The existing access at the Del Norte/Fifth Street Off-site Alternative site is on S. Del Norte Boulevard. It appears to be unsignalized. Most construction vehicles would likely exit directly right onto northbound S. Del Norte Boulevard to access Highway 101 and would not need to cross lanes of opposing traffic. However, some vehicles might exit left onto southbound S. Del Norte Boulevard, where they would cross a lane of northbound traffic and could be at greater risk of a collision. Additionally, these vehicles turning left would encounter the signalized railroad crossing at S. Del Norte Boulevard just north of Fifth Street. There is a small risk at rail crossings of inattentive or reckless drivers becoming caught on the railroad tracks and colliding with a train. However, given that the crossing is signalized, the risk of collision is reduced.

Many drivers exiting P3 would turn left onto northbound Harbor Boulevard, where they would need to cross a lane of southbound traffic and would be at higher risk of accidents. Furthermore, demolition of MGS Units 1 and 2 under P3 could generate more worker trips that could cross a lane of opposing traffic. Driver safety impacts for the Del Norte/Fifth Street Off-site Alternative would be **less than or similar to P3**. A traffic control plan would reduce any potentially significant impacts to less than significant.

Damage to Roads and Bridges

Construction at the Del Norte/Fifth Street Off-site Alternative site would require truck trips that could potentially damage roads. Impacts would be potentially significant but could be reduced to less than significant with preparation and implementation of a traffic control plan, including a requirement to repair and restore damaged roads. Because P3 would require additional truck trips associated with demolition of MGS Units 1 and 2, the potential for damage to roads from the Del Norte/Fifth Street Off-site Alternative would be **less than P3**.

Operations Traffic

The same number of operations workers (17 workers) and truck deliveries would be used for the Del Norte/Fifth Street Off-site Alternative and the proposed P3. The location of P3 would enable it to use existing MGS workers, while the location of this off-site alternative would add new project operations vehicle trips to the area. However, the number of operations workers and deliveries would be relatively small and would not generate significant impacts on traffic LOS. Due to the small number of operations workers and deliveries, impacts would be **similar to P3** and less than significant.

Potential Impact of Thermal Plumes on Aircraft and Pilot Safety

The Del Norte/Fifth Street Off-site Alternative is located approximately 1.4 miles southwest of Camarillo Airport and 4 miles east of Oxnard Airport. From the Camarillo Airport, arrival and departure tracks shown in Exhibits 2F and 2G of the Airport Comprehensive Land Use Plan for Ventura County, it appears that arriving aircraft and arriving and departing helicopters often pass very close to, if not directly over, the Del Norte/Fifth Street Off-site Alternative site (Ventura County Airport Land Use Commission 2000). Aircraft from the Oxnard Airport, given its location 4 miles away, would be less likely to pass directly over the site, but it could possibly occur. Aircraft directly overflying the project site would be subject to hazards from the project's high-velocity thermal plumes, which would extend approximately 4,260 feet above ground level.

The proposed P3 is located approximately 2 miles northwest of the Oxnard Airport, slightly further than the distance between the Del Norte/Fifth Street Off-site Alternative and the Camarillo Airport. Aircraft following the Oxnard Airport's left-hand traffic pattern would not be expected to fly regularly over the P3 site, although an occasional overflight could occur. Staff has been working with the FAA to obtain flight track information. Staff will include more information on flight tracks over the P3 site in the FSA.

Because of the expected more regular aircraft overflight of the Del Norte/Fifth Street Off-site Alternative and its closer proximity to an airport, pilot safety impacts from the Del Norte/Fifth Street Off-site Alternative would be greater than P3. This alternative would introduce a new hazard for pilots to avoid near the traffic pattern and in an area commonly overflown by pilots as they arrive at and depart from the airport. For this reason, impacts on aircraft and pilot safety would be **greater than P3**, and the impact conclusion is significant and unavoidable.

Transmission Line Safety and Nuisance

The transmission line for the Del Norte/Fifth Street Off-site Alternative would be designed and constructed in conformance with applicable LORS.

Impacts on Aviation Safety Relating to Location of Transmission Lines

Staff assessed the potential for aviation hazards with regard to: a) the height of the transmission structures, and b) distances and orientation with respect to identified runways. According to Title 14 of the Code of Federal Regulations, Section 77.9(b)(1), for construction or alterations within 20,000 feet (3.8 miles) of an airport with a runway more than 3,200 feet in length, the FAA shall be notified if the height of the construction or alteration exceeds an imaginary surface extending outward and upward at a slope of 100 to 1 from the nearest point of the nearest runway of the airport.

The Del Norte/Fifth Street Off-site Alternative is approximately 7,392 feet (1.4 miles) southwest of Camarillo Airport, which has a runway longer than 3,200 feet. Therefore, the FAA regulations apply, and the threshold for FAA notification at the site would be a structure height of 73.9 feet. The 100-foot-tall transmission structures would exceed this threshold, requiring the applicant to file a “Notice of Proposed Construction or Alteration” (Form 7460-1) with the FAA to initiate the FAA’s obstruction hazard review of the structures. Impacts on the safety of aircraft would be potentially significant and unavoidable for this off-site alternative, depending on whether the FAA determined that the transmission structures presented an obstruction hazard. Therefore, impacts relating to aviation safety from the Del Norte/Fifth Street Off-site Alternative are **greater than P3** and potentially significant and unavoidable.

Interference with Radio-Frequency Communication

Connecting to the closest substation (Ormond Beach or Mandalay) would require installing a 220-kV transmission line along an approximate 6- to 8-mile-long linear alignment. A potential route for the transmission line under this alternative is undetermined, but the area between this off-site alternative and either substation includes rural agricultural and residential uses. Noise and interference are generally not problems for well-maintained transmission lines; however, because of the distance and undetermined route between this off-site alternative and the substation (compared to P3), the potential for corona-related radio-frequency interference or complaints under this off-site alternative could be **greater than P3**. Mitigation measures similar to those recommended for the proposed P3 would reduce potential impacts to less than significant.

Potential for Transmission Lines to Cause Audible Noise

Audible noise is not generally expected at significant levels from transmission lines less than 345 kV. Therefore, staff would not expect the transmission line for this off-site alternative to add significantly to current background noise levels, and **no impact** would occur.

Potential Fire Hazards

Like the proposed P3, the Del Norte/Fifth Street Off-site Alternative would comply with "Fire Prevention Standards for Electric Utilities" (Cal. Code Regs., tit. 14, § 1250 et seq.). This impact is potentially significant and **similar to P3**. Compliance with applicable LORS and implementation of mitigation measures would reduce the impact to less than significant (see Condition of Certification **TLSN-3** in the **Transmission Line Safety and Nuisance** section of this staff assessment).

Potential for Hazardous and Nuisance Shocks

The transmission line for this off-site alternative would be constructed in conformance with the requirements of CPUC's GO-95, "Rules for Overhead Line Construction," and minimum standards for installation, operation, and maintenance of electrical installation and equipment to provide practical safety and freedom from danger ("High Voltage Electrical Safety Orders") (Cal. Code Regs. tit. 8, § 2700, et seq.). Therefore, hazardous shocks are highly unlikely to occur from construction and operation of the Del Norte/Fifth Street Off-site Alternative. The potential for nuisance shocks around the transmission line would be minimized through standard industry grounding practices. Impacts relating to hazardous and nuisance shocks are **similar to P3**, and implementation of mitigation measures would reduce impacts to less than significant (see Conditions of Certification **TLSN-1** and **TLSN-4** in the **Transmission Line Safety and Nuisance** section of this staff assessment).

Potential for Electric and Magnetic (EMF) Exposure

The potential impact relating to EMF exposure is **greater than P3**. However, implementation of mitigation measures like those recommended under the proposed P3 would reduce the impact to less than significant (see Conditions of Certification **TLSN-1** and **TLSN-2** in the **Transmission Line Safety and Nuisance** section of this staff assessment).

Visual Resources

Staff concludes that the proposed P3 would have less-than-significant impacts relating to its potential to adversely impact a scenic vista or scenic resources of a state scenic highway. No scenic vistas are identified near the Del Norte/Fifth Street Off-site Alternative. This off-site alternative is not near a state-designated scenic highway. Therefore, under the Del Norte/Fifth Street Off-site Alternative, these impacts are **similar to P3**.

The central and northwestern portions of the approximately 12.5-acre Del Norte/Fifth Street Off-site Alternative are developed with industrial uses. Utilitarian single-story

buildings, storage areas, and other structures are located on the site. The concrete batch plant includes a powder material storage system (silo), which stands approximately 120 feet tall on the center of the site (**Alternatives Figure 4**). The visual character of the area surrounding the site is both semirural and industrial. The oil refinery on the south side of E. Fifth Street includes an estimated 150-foot-tall oil derrick (**Alternatives Figure 5**). To the northwest is a large regional recycling center. The nearby areas west and north of the site are almost completely developed with a mixture of warehouse commercial, research and development, and industrial uses. Nevertheless, Oxnard includes Fifth Street and Del Norte Boulevard on its list of scenic routes (City of Oxnard 2006). Large acreage agricultural operations are located in the surrounding area to the south and east. The closest residential area is likely the East Village development approximately 1.25 miles northwest of the alternative site.

The Del Norte/Fifth Street Off-site Alternative would modify existing visual conditions and increase the bulk, mass, and height of industrial-type structures at the site that would be visible from the surrounding area. Major structural elements of the proposed P3 include the combustion turbine generator (107 feet long, 52 feet wide, and 79 feet high); nitrogen oxide removal equipment (87 feet long, 33 feet wide, and 99 feet high); and the stack (22 feet in diameter and 188 feet high) (NRG 2015a). Other structures would include 100-foot-tall transmission structures. A power plant similar to the P3 at this alternative site would strongly attract the attention of viewers in the surrounding area, and especially from the vicinity of S. Del Norte Boulevard and E. Fifth Street (State Highway 34).

Alternatives Figure 6 provides a view of the landscape looking northwest toward the site from E. Pleasant Valley Road; this viewpoint is approximately 1 mile from the Del Norte/Fifth Street Off-site Alternative. Built structures in the background primarily include low, horizontal buildings in agricultural areas. The oil derrick on the property south of the alternative site is visible in this view. The concrete batch plant silo on the site is barely visible in the background. Foreground views in the area are mostly characterized by flat, cultivated and fallow fields and associated structures. The estimated visual absorption capability (VAC)[7] of the landscape is *moderate* (using a general comparative scale of low, moderate, and high). Constructing a power plant similar to the P3 at this alternative site would add to the overall mass of industrial structures for views toward the site. For views of the site inside an approximately 1-mile radius, construction of a power plant similar to the P3 at the Del Norte/Fifth Street Off-site Alternative would likely become the tallest, most visually dominant industrial facility in the landscape.

Based on staff's observations during a site visit in April 2016, primary viewer groups near the site include motorists in passenger vehicles and truck drivers traveling in the area to conduct business, deliver and purchase goods and supplies, and workers in the agricultural fields and at businesses near the site. These local viewers could be

[7] VAC is an estimate or measure of the capacity of a landscape to absorb a visual alteration without significantly affecting visual character.

moderately sensitive to the character and quality of views in the area of this alternative site. Although the upper portion of the stack could be visible from the East Village residential area north of Camino del Sol, a power plant at this alternative site is unlikely to dominate the view from residential neighborhoods that are a mile or more from the site. There are no recreational use areas near this off-site alternative.

Staff compared this off-site alternative to the proposed P3 and assessed its potential to substantially degrade the existing visual character or quality of the site and its surroundings. In assessing the P3's visual impact, it is necessary to consider baseline visual conditions at the MGS site, which includes aging power plant structures adjacent to Mandalay State Beach (also called Mandalay County Park) and McGrath State Beach. The existing MGS is the most visually dominant built structure along several miles of the coast extending north and south of the site. The estimated VAC of the landscape is *low* for the P3 site. The proposed P3 would generally entail construction of a power block with less mass and height compared to the existing MGS Units 1 and 2, which would be demolished and removed from the site under the proposed project. The primary viewer groups in public use areas near the P3 site are residents, recreationists, and visitors at nearby open space areas. The nearest residential development is approximately one-half mile south of the project site. In general, visual sensitivity of the viewing public is expected to be *high* at the P3 site.

Staff's comparative analysis considers the following major points:

- The proposed P3 at the MGS site would be less visually imposing compared to the existing MGS Units 1 and 2, which would be demolished and removed from the site.
- Staff assumes that visual sensitivity is *high* in the coastal area where the P3 would be constructed and operated, and the landscape's VAC is *low*.
- Using the Del Norte/Fifth Street Off-site Alternative to construct and operate a project similar to the P3 would replace existing industrial uses with a power plant that would increase the mass and height of existing structures on a site bordered by major travel corridors.
- Staff assumes that visual sensitivity is *moderate* in the area surrounding the Del Norte/Fifth Street Off-site Alternative site, and the landscape's VAC is *moderate*.

In comparing the potential impact on visual character or quality, staff concludes that the impact at the Del Norte/Fifth Street Off-site Alternative could be **less than P3**; however, the analysis must also account for the relatively high level of viewer exposure given that the site is adjacent to heavily traveled roadways.

Although many properties in the vicinity of this off-site alternative are used for industrial purposes, and visual sensitivity is considered *moderate*, construction and operation of a power plant at the Del Norte/Fifth Street Off-site Alternative would likely become the most visually prominent industrial-type facility in the area. Staff conservatively concludes the potential for this off-site alternative to substantially degrade the existing visual character or quality of the site and its surroundings is **less than or similar to P3**, and the impact conclusion is potentially significant. Implementation of mitigation

measures requiring surface treatments and possibly other visual screening measures would reduce the impact to less than significant for this off-site alternative. Mitigation measures could include constructing a decorative fence or wall to screen street-level views of the site and architectural screening for the upper portions of the power block structures.

Demolition and removal of MGS Units 1 and 2 is not necessarily assumed to occur under the Del Norte/Fifth Street Off-site Alternative. If the MGS Units 1 and 2 remained nonoperational on the site, the potential to cause substantial degradation of the existing visual character or quality of the P3 site and its surroundings would generally be **greater than P3**, and the impact would remain significant and unavoidable. Because MGS Units 1 and 2 would be demolished and removed from the site under the P3, this is an impact that would not occur under the proposed P3.

Exterior permanent lighting of a power plant similar to the P3 at the Del Norte/Fifth Street Off-site Alternative would be limited to areas required for safe and secure operations. Light sensors or switches would control lighting not required continuously during nighttime hours so that lighting would be on only when needed. Light fixtures would be directed downward and shielded to avoid off-site backscatter and glare. Staff considers the potential for the new source of substantial light or glare to adversely affect day or nighttime views in the area of this off-site alternative to be **similar to P3**. Mitigation measures similar to those proposed for the P3 would reduce the impact to less than significant.

Waste Management

LORS are enforced at the local level to ensure recycling and safe disposal of solid and hazardous waste, and these LORS would apply also to wastes generated under the Del Norte/Fifth Street Off-site Alternative. Therefore, the potential for impacts on human health and the environment from potential waste discharges relating to this off-site alternative would be the **same as P3**.

Under this off-site alternative, the demolition of structures would cause an increase in the generation of waste; however, more than 75 percent of the demolition waste would be recycled as required under Assembly Bill (AB) 341. Ancillary buildings and structures, such as water storage tanks, retention basins, ammonia tanks, and an administration and warehouse/lab buildings would need to be constructed. A new 220-kV switchyard would need to be constructed at the site. This work would also generate additional construction waste. The project owner would be required to comply with the waste management mitigation measures and applicable LORS to minimize impacts on waste disposal facilities; therefore, the potential for disposal or diversion of project materials to cause impacts on existing waste disposal or diversion facilities would be **similar to P3**.

The Del Norte/Fifth Street Off-site Alternative consists of two lots; one lot contains a concrete batch plant, and the other (signage indicates it is a paint yard) contains a large warehouse/shop building and two smaller structures. Land uses in the site vicinity include industrial and agricultural. A portion of the Del Norte/Fifth Street Off-site

Alternative is considered a brownfield due to the commercial/industrial use on the site. Ground disturbance similar to P3 construction would be required for this alternative. Given past land uses, demolition of existing buildings and project construction could encounter site contamination that would require remediation; therefore, the potential impacts on human health and the environment would be the **same as P3**.

The Del Norte/Fifth Street Off-site Alternative would have potentially significant impacts on waste management, but all of those impacts can be reduced to less than significant with implementation of mitigation measures and through LORS compliance.

Worker Safety and Fire Protection

The Del/Norte Fifth Street Off-site Alternative would have the same worker safety and fire protection requirements as the proposed P3. Since the requirements are the same, this off-site alternative would present potentially significant impacts that could be mitigated to less than significant the **same as P3**.

ORMOND BEACH AREA OFF-SITE ALTERNATIVE

Staff evaluated the potential environmental impacts of developing a project similar to the proposed P3, including ancillary buildings and other structures, and two retention basins to collect stormwater and process wastewater on an approximately 14.5-acre undeveloped industrial site in the southeast portion of Oxnard. The site is located approximately one-half mile inland from Ormond Beach and just east of (outside) the Coastal Zone boundary. The site address is 5980 Arcturus Avenue near the intersection with E. McWane Boulevard (**Alternatives Figure 7**). The site is composed of two parcels owned by one landowner (APNs 2310093155 and 2310093135).

The site topography is flat. Historical Google Earth images through 2009 show an industrial development covering the majority of the site. A railroad spur extended into the site's northeast border, which must have served to transport materials to and from the on-site industrial area. As of 2011, the site had been cleared of most structures except for the old railroad spur. Early in 2016, the site was completely graded and surfaced with gravel. Based on staff's observations during a site visit in April 2016, the site is being used by KIA Motor Corporation to park new vehicles off-loaded from cargo ships at the Port of Hueneme.

The utility corridor bordering the east side of Edison Drive approximately one-quarter mile east of the Ormond Beach Area Off-site Alternative includes an existing 220- to 230-kV transmission line that extends south to SCE's Ormond Beach Substation adjacent to the Ormond Beach Generating Station (OBGS) (see **Alternatives Figures 1b** and **7**). A 30- to 36-inch diameter natural gas pipeline is located in the same utility corridor along Edison Drive. Providing natural gas to the site would likely require constructing a natural gas pipeline along E. McWane Boulevard to connect to the existing pipeline. The natural gas pipeline would require constructing the buried pipeline to cross under Edison Drive and the transmission line that parallels Edison Drive. Oxnard's system of wastewater (eastern trunk sewer line) and potable water pipelines border the site along Arcturus Avenue and E. McWane Boulevard (City of Oxnard

2006). Like the proposed P3, total estimated water use would be approximately 16 acre-feet per year.

The immediate surrounding area is characterized by industrial-type uses to the east and west. Businesses on the properties immediately east of the Ormond Beach Area Off-site Alternative include Aluminum Precision Products and Irwin Industries, which fabricates energy and industrial infrastructure. The property west of the site is occupied by Arcturus Manufacturing Corporation, which provides customized product and material solutions for aerospace and power generation. A large BMW vehicle distribution center is located north of the site. The area south of the site includes open space and agricultural lands.

The closest residential neighborhood is located approximately one-half mile northwest of the approximate center point of the off-site alternative, on the north side of E. Hueneme Road between Saviers Road and Arcturus Avenue.

The Ormond Beach Area Off-site Alternative would require constructing an on-site power plant switchyard. The Ormond Beach Substation is located less than 1 mile south of this off-site alternative and adjacent to the OBGS. A connection from the site to the Ormond Beach Substation would require installing transmission structures and an overhead 220-kV transmission line, possibly extending east along a short segment of E. McWane Boulevard and then south along or within the utility corridor that parallels the east side of Edison Drive.

The area between this off-site alternative and the Ormond Beach Substation is undeveloped. However, construction and installation of the transmission line would require implementation of mitigation measures to reduce or avoid potential impacts to less than significant (e.g., construction-related impacts on water quality, air quality, and biological resources). Potential specific impacts relating to transmission line installation are indeterminate for this off-site alternative (e.g., impacts on visual resources from the addition of transmission line structures in the landscape).

Land Use Planning

To determine potential consistency of the Ormond Beach Area Off-site Alternative with land use LORS, staff reviewed the 2030 Oxnard General Plan. The site is designated by the General Plan as Light Industrial (ILT), which allows manufacturing uses where the principal activity occurs within a building, but also permits outdoor assembly, fabrication, public services, and storage (City of Oxnard 2011). Goal ICS-17 (Infrastructure & Community Services) of the General Plan addresses providing adequate and efficient public utilities (including electric facilities) that meet the needs of the residents of Oxnard.

This alternative site is not located within the Coastal Zone and would not be subject to review of potential impacts on coastal resources. The zoning designation for this alternative site is Heavy Manufacturing Planned Development (M2-PD). The M2-PD zone district allows chemical processing and manufacturing (acetylene, acids alcohols, ammonia, bleach, etc.), manufacturing of building materials (asphalt, brick, cement,

etc.), petroleum refining, and other similar uses the planning and environmental services manager finds to be consistent with the purpose and intent of this zone. The Planned Development (Additive) zone (PD) is intended to ensure the orderly development of land in conformance with the General Plan and to permit departures from the restrictions imposed within the basic zones. A narrow area inside the southern boundary of the Ormond Beach Area Off-site Alternative is zoned Heavy Manufacturing (M2) without the Planned Development (Additive) zone, which includes “steam electric generating stations operated by gas or fuel oil” among the permitted uses for that zone. The Ormond Beach Area Off-site Alternative contains two parcels; development of a facility at the site would require the project owner to comply with the setback requirements specified for the underlying zone district to avoid constructing over parcel lines.

A proposal for a power generating facility in the M2-PD zone district would normally require a conditional use permit. To approve a power generation facility at this alternative site, Energy Commission staff would have to determine that the proposed use is in conformance with the General Plan and other adopted standards. Special conditions that would be considered by staff (in lieu of the City of Oxnard City Council) and potentially imposed on the project would include the following (verbatim from Section 16-531 of the Oxnard Zoning Code addressing requirements for granting a special use permit):

- The nature, condition and development of adjacent uses, buildings and structures shall be considered, and no proposed special use permit shall be granted if the approval body finds such use will adversely affect or be materially detrimental to such adjacent uses, buildings or structures or to the public health, safety or general welfare.
- The site that is subject to the special use permit shall be adequate in size and shape to accommodate the yards, walls, fences, parking and loading facilities, landscaping and other items which may be required.
- The site that is subject to the special use permit shall be served by highways adequate in width and improved as necessary to carry the kind and quantity of traffic such use would generate.
- The site that is subject to the special use permit shall be provided with adequate sewage, water, fire protection and storm drainage facilities.

Although the Energy Commission would have in lieu permitting authority for an electric generating facility at the Ormond Beach Area Off-site Alternative, Section 25506 of the Warren-Alquist Act requires the Energy Commission to request comments and recommendations from appropriate government agencies (e.g., a local municipality) regarding the design, operation, and location of the facilities in relation to environmental quality, public health and safety, and other factors on which they may have expertise.

The Ormond Beach Area Off-site Alternative could be designed to be consistent with applicable land use LORS. City of Oxnard planning staff has presented the site as a suitable alternative site for the project (City of Oxnard 2015b).

Similar to the No-Project Alternative, under the Ormond Beach Area Off-site Alternative, the existing MGS Units 1 and 2 would remain nonoperational on the MGS power plant site and would not necessarily be demolished and removed from the site. In the absence of a license from the Energy Commission for a power plant at the P3 site, the Commission would not have authority over the MGS power plant site and proposed future uses of the MGS site would be subject to review and approval of a coastal development permit by the City of Oxnard.

Demographic Screening

Similar to staff's analysis for the proposed project, staff considered the potential impacts on the EJ population residing within 6 miles of the Ormond Beach Area Off-site Alternative.

Minority Populations

Alternatives Figure 8 (using a 1-, 3-, and 6-mile radius) shows that the population residing in the area of the Ormond Beach Area Off-site Alternative constitutes an EJ population based on race and ethnicity as defined by the federal guidance document, *Environmental Justice: Guidance Under the National Environmental Policy Act* (Council on Environmental Quality 1997).

Populations Below Poverty Level

Staff used the cities of Oxnard and Port Hueneme to determine the relative poverty levels within the 6-mile radius and the county as the reference geography. **Alternatives Table 4** shows the percentages of population living below the federal poverty level in the 6-mile radius and the comparative data for the county. Staff concludes that when compared to the poverty data for the county, the cities of Oxnard and Port Hueneme have higher percentages of people living below the poverty level than the county and thus are considered EJ populations based on poverty.

Alternatives Table 4
Poverty Data within the Ormond Beach Area Off-site Alternative Area

	Total Population (see note)	Population Below Poverty Level	Percent Below Poverty Level (%)
	Estimate	Estimate	Estimate
Cities in a 6-Mile Radius			
Oxnard	200,076 ± 394	31,956 ± 2,320	16.00 ± 1.2
Port Hueneme	21,020 ± 310	3,848 ± 838	18.30 ± 4
Reference Geography			
Ventura County	824,329 ± 959	91,912 ± 3,350	11.10 ± 0.4

Note: *Population* for whom poverty is determined.
Staff's analysis of the 2010–2014 estimates returned coefficient of variation values less than 15, indicating the data is reliable.
Source: U.S. Census 2015

Additional Environmental Justice Population Considerations

Cultural Resources staff has specific obligations to consult with tribal entities regarding potential impacts on resources used by Native Americans. A summary of Energy Commission tribal consultation efforts is provided in the **Cultural Resources** section of this staff assessment. It is not known whether Native Americans use any resources for current hunting and gathering activities within 6 miles of this alternative. Therefore, impacts on cultural resources-related EJ populations are indeterminate.

Conclusion

Staff has recommended conditions of certification to reduce potential environmental impacts of the proposed P3 relating to Air Quality, Hazardous Materials Management, Noise and Vibration, Soil and Water Resources, Traffic and Transportation, Transmission Line Safety and Nuisance, and Waste Management. With implementation of similar mitigation measures, potentially significant environmental impacts of the Ormond Beach Area Off-site Alternative on populations in the area of this off-site alternative, including the EJ population, could be reduced to less than significant. Public Health and Socioeconomics staff concludes that the project impacts relating to their technical areas would be less than significant and therefore would have less-than-significant impacts on populations in a 6-mile radius of the Ormond Beach Area Off-site Alternative, including the EJ population.

The Ormond Beach Area Off-site Alternative does not necessarily assume demolition or removal of MGS Units 1 and 2, thus leaving the units to possibly deteriorate visually, which could create a greater visual impact from viewpoints at public use areas within the viewshed of MGS Units 1 and 2. Depending on the viewpoint distance, this visual impact could affect viewers in inland areas with unobstructed views of the existing MGS, including the area's EJ population.

In the event that a future land use agreement or property division or sale included removal of some of the existing power block structures and infrastructure, the visual resources impacts from the existing MGS Unit 1 and 2 power block structures remaining on the site would not persist.

Potential to Attain the Project Objectives

The applicant's project objectives include developing a 262-MW natural gas-fired power plant at the MGS site and fulfilling its 20-year agreement with SCE (NRG 2015a). The CPUC issued its final decision in May 2016 (D.16-05-050) approving most of SCE's energy resource contracts for the Moorpark sub-area, including SCE's contract with NRG for the P3. The applicant includes a project objective to design, permit, build, and commission the P3 by June 2020. The CPUC's Track 1 decision addresses procuring resources to replace retiring OTC generators and meet LCR needs by 2021. An alternative site in the Moorpark sub-area such as the Ormond Beach Area Off-site Alternative could, in theory, provide a location to develop a project similar to the P3. However, it is questionable whether NRG could obtain site control and complete environmental review and permitting to have a project built and commissioned at this alternative site by 2020 or 2021 to satisfy LCR needs.

If construction and operation of this off-site alternative was feasible, it could potentially satisfy five of the applicant's eight project objectives:

- Provide an efficient, reliable, and predictable power supply by using a simple-cycle, natural gas-fired combustion turbine to replace the existing OTC generation;
- Support the local capacity requirements of the CAISO's Big Creek/Ventura local capacity reliability area;
- Develop a 262-MW nominal net 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 electrical grid;
- Site the project on property that has an industrial land use designation with consistent zoning; and
- Safely produce electricity without creating significant environmental impacts.

This off-site alternative would likely meet the last project objective listed above. Staff's analyses of this off-site alternative (below) describe environmental impacts that are generally similar to the proposed P3. Mitigation measures similar to the conditions of certification for the P3 would reduce potentially significant impacts to less than significant.

Potential Feasibility Issues

The P3 applicant does not have control of the Ormond Beach Area Off-site Alternative site, which includes two parcels under single ownership (NRG 2015b). In July 2013, the P3 applicant offered a reasonable, market-based offer to the property owner. NRG's offer was declined (NRG 2015b). Developing a project similar to the P3 at this site would require NRG to attempt again to negotiate a property purchase or lease agreement with the owner. Depending on the outcome of such a negotiation, project viability could be affected.

Constructing and operating a project similar to P3 at the Ormond Beach Area Off-site Alternative site would require a new power plant design proposal for the site with plans and analyses for off-site utility connections. Assuming capacity is available, Oxnard's water system could supply potable water to the site from the water line that extends along the west and south boundaries of the site. Similarly, Oxnard's eastern trunk sewer line borders the site.

The Ormond Beach Area Off-site Alternative would require constructing an on-site power plant switchyard and 220-kV transmission line connection to SCE's Ormond Beach Substation next to the OBGS approximately 1 mile south of the site. The possible retirement of 1,500 MWs of generating capacity at the OBGS could allow this off-site alternative to interconnect with the grid at the Ormond Beach Substation. Connecting to an existing 220-kV breaker position at the Ormond Beach Substation would be unlikely to cause "downstream" impacts on the transmission grid.

This interconnection scenario would require a much shorter transmission line compared to the Del Norte/Fifth Street Off-site Alternative, but it would require additional planning and analysis relating to ROW acquisition for the new transmission line. The work to gain site control of the Ormond Beach Area Off-site Alternative, conduct site planning and analysis, and plan its grid interconnection would delay the project and could affect its viability as an alternative.

Environmental Analysis

Alternatives Table 5 presents a summary comparison of impacts of the proposed P3 to the same or similar potential impacts of the Ormond Beach Area Off-site Alternative. Comparative discussions for each environmental topic area follow the table.

Alternatives Table 5
Summary Comparison of Impacts of the Proposed P3
to the Ormond Beach Area Off-site Alternative

Environmental Effect	Proposed P3	Ormond Beach Area Off-site Alternative
Air Quality		
Construction-related emissions	PSM	Similar to P3 (PSM)
Project operations emissions	PSM	Similar to P3 (PSM)
Greenhouse Gases (construction- and demolition-related impacts)	PSM	Similar to P3 (PSM)
Biological Resources		
Project construction and demolition impacts		
Impact on jurisdictional wetlands and other waters	SM	—
Impacts on common vegetation species	LS	Similar to P3 (LS)
Impacts on common wildlife species	LS	Similar to P3 (LS)
Impact of noise on nesting birds	PSM	Less than P3 (PSM)
Impacts on special-status plants and habitat	PSM	Less than P3 (PSM)
Impacts on special-status wildlife *(see note)*	PSM	Less than P3 (PSM)
Impacts on special-status birds with MGS Units 1 and 2 left on site	—	Greater than P3 (PSU)
Impacts of dust, nighttime lighting, and invasive weeds on biological resources	PSM	Less than P3 (PSM)
Biological resources note: excluding nesting birds		
Project operations impacts		
Impacts on biological resources relating to nitrogen deposition	LS	Similar to P3 (LS)
Impact relating to potential electrocution of avian species	PSM	Similar to P3 (PSM)
Cultural Resources		
Impacts on surficial archaeological and ethnographic resources	—	Indeterminate
Impacts on buried archaeological resources	PSM	Indeterminate
Impacts on built environment resources	—	Indeterminate
Geology and Paleontology		
Risk of damage to paleontological resources	PSM	Similar to P3 (PSM)
Potential impacts on geological or mineralogical resources	—	—
Risk of surface fault rupture	LS	Similar to P3 (LS)

Alternatives Table 5
Summary Comparison of Impacts of the Proposed P3 to the Ormond Beach Area Off-site Alternative

Environmental Effect	Proposed P3	Ormond Beach Area Off-site Alternative
Risk of liquefaction, dynamic compaction, and lateral spread from strong seismic shaking	PSM	Similar to P3 (PSM)
Risk of potential excessive settlement or expansion of soils causing an impact on structures	PSM	Similar to P3 (PSM)
Risk of inundation by tsunami resulting from an earthquake or local submarine landslide	PSM	—
Hazardous Materials Management		
Risk of fire or explosion off-site from natural gas usage during project operation	PSM	Same as P3 (PSM)
Risk of hazardous materials spill impact en route (off-site) from hazardous materials transport to the project site	PSM	Same as P3 (PSM)
Risk of hazardous materials spill or migration off-site from hazardous materials storage and use on-site	PSM	Same as P3 (PSM)
Risk of significant drawdown of emergency response services causing off-site impact	LS	Same as P3 (LS)
Noise and Vibration		
Potential noise impacts at noise-sensitive locations	PSM	Similar to P3 (PSM)
Public Health		
Construction-related diesel particulate matter (DPM) emissions	LS	Similar to P3 (LS)
Project operations-related toxic air contaminants (TACs) emissions	LS	Similar to P3 (LS)
Socioeconomics		
Induce substantial population growth in an area, either directly or indirectly	LS	Similar to P3 (LS)
Displace substantial numbers of people and/or existing housing, necessitating the construction of replacement housing elsewhere	LS	Similar to P3 (LS)
Adversely impact acceptable levels of service for police protection, schools, and parks and recreation	LS	Similar to P3 (LS)
Increased property taxes, construction and operation employment income, and increased state and local taxes and fees.	B	Similar to P3 (B)
Soil and Water Resources		
Water quality impacts during project construction	PSM	Similar to P3 (PSM)
Water quality impacts during demolition	PSM	—
Potential impacts from on-site and off-site flooding	PSM	Indeterminate
Potential flooding hazard based on Federal Emergency Management Agency floodplain delineation maps *(see note)*	LS	Same as P3 (LS)
Water quality impacts from wastewater discharge	SM	Similar to P3 (SM)
Water quality impacts from power plant operations	PSM	Similar to P3 (PSM)
Potential impacts on potable water supplies	—	—
Water resources note: Based on current FEMA mapping effective 2010. May change when updated map is released in 2016.		
Traffic and Transportation		
Potential impacts from increased construction workforce traffic that is substantial compared to the existing traffic load and capacity of the street system	PSM	Less than P3 (PSM)

Alternatives Table 5
Summary Comparison of Impacts of the Proposed P3 to the Ormond Beach Area Off-site Alternative

Environmental Effect	Proposed P3	Ormond Beach Area Off-site Alternative
Potential for increased workforce traffic to cause driver safety impacts during project demolition and/or construction	PSM	Less than P3 (PSM)
Potential for increased workforce traffic to damage roads and bridges during project demolition and/or construction	PSM	Less than P3 (PSM)
Potential impacts from increased traffic during project operation (i.e., post-construction traffic) that is substantial compared to the existing traffic load and capacity of the street system	LS	Similar to P3 (LS)
Potential impacts from thermal plumes on aircraft and pilot safety	PSM	Less than P3 (PSM)
Transmission Line Safety and Nuisance		
Impacts on aviation safety relating to location of transmission lines	LS	Less than or similar to P3 (LS)
Interference with radio-frequency communication	LS	Similar to P3 (LS)
Potential for transmission lines to cause audible noise	LS	—
Potential fire hazards	PSM	Similar to P3 (PSM)
Potential for hazardous shocks	PSM	Similar to P3 (PSM)
Potential for nuisance shocks	PSM	Similar to P3 (PSM)
Potential for electric and magnetic (EMF) exposure	PSM	Similar to P3 (PSM)
Visual Resources		
Substantial adverse effect on a scenic vista	LS	Same as P3 (LS)
Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway	LS	Same as P3 (LS)
Substantially degrade the existing visual character or quality of the site and its surroundings *(see note)*	PSM	Less than P3 (PSM)
Impacts on visual resources with MGS Units 1 and 2 left on site	—	Greater than P3 (PSU)
Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area	PSM	Similar to P3 (PSM)
Visual resources note: Staff identifies a potentially significant impact at KOP 3, which is less than 1,000 feet from the P3 site. For the other KOPs, staff identifies less-than-significant impacts.		
Waste Management		
Potential for impacts on human health and the environment relating to waste discharges	PSM	Same as P3 (PSM)
Potential for disposal or diversion of project materials to cause impacts on existing waste disposal or diversion facilities	PSM	Similar to P3 (PSM)
Potential for impacts on human health and the environment relating to past or present soil or water contamination	PSM	Same as P3 (PSM)
Worker Safety and Fire Protection		
Risk of fire or explosion impact off-site resulting from natural gas usage during construction and operation	PSM	Same as P3 (PSM)
Risk of significant drawdown of emergency response services causing off-site impact	LS	Same as P3 (LS)

Air Quality

The Ormond Beach Area Off-site Alternative is located in the same air basin as the proposed P3, the South Central Coast Air Basin. The proposed P3 and this off-site alternative are located in the same local air district, the Ventura County Air Pollution Control District (VCAPCD). The existing ambient air quality is the same for the alternative site and the proposed P3 site, and the same air quality LORS pertain to this off-site alternative.

Under the Ormond Beach Area Off-site Alternative, approximately 262 MWs of natural gas-fired generation would be constructed and operated at the alternative site. The proposed P3 would not be constructed at the MGS site. Both construction- and operations-related impacts on air quality for this alternative would likely be **similar to P3**, and the same air quality rules and regulations would apply to the off-site alternative. Impacts relating to GHG emissions would also be **similar to P3**. Potentially significant impacts on air quality would be reduced to less than significant with implementation of the same mitigation measures as those proposed for P3.

Biological Resources

The southeast portion of this off-site alternative was previously developed with industrial facilities. Google Earth imagery from February 2016 shows that the site was recently graded and the interior cleared of most if not all remaining vegetation. Staff attended a site visit in April 2016 and viewed the site from the fenced property boundary along E. McWane Boulevard and Arcturus Avenue. The entire site has been completely graded and is being used for parking of new automobiles on a graveled surface.

An unnamed drainage canal occurs approximately one-half mile west of the site, which drains to the Ormond Beach Wetlands southwest of the alternative site. Critical habitat for the western snowy plover, a federally-threatened bird, is located approximately 1 mile south of the site, along the coastal beaches and dunes.

The Ormond Beach area presents a significant wetland restoration opportunity in the region, and it has been prioritized by a number of agencies for conservation and restoration. Over 1,500 acres of habitat adjacent to this alternative site are current being restored and others are planned for restoration (NRG 2015b) (Aspen Environmental Group 2009). In general, the area supports a large number of special-status plant and wildlife species, and the area has the opportunity to be expanded. The study area for restoration includes a maximum of approximately 1,750 acres, including a large property bordering the Ormond Beach Area Off-site Alternative to the south that is owned by the State Coastal Conservancy and The Nature Conservancy. **Alternatives Figure 9** shows the restoration study area.

Construction and Demolition Impacts

The Ormond Beach Area Off-site Alternative does not have the existing facilities and other site improvements that are already present at the P3 site (i.e., retention basins and pads for other ancillary facilities). Additional construction would be required to install and operate a power plant at this alternative site. However, construction activities

at this alternative site would be generally similar to the proposed P3. Compared to the proposed P3, staff assumes the same types of equipment would be used to prepare the alternative site and construct the power plant facilities.

The site has been recently graded and cleared of any remaining vegetation, and no vegetation remains on the interior of this off-site alternative although there could be weedy (ruderal) species remaining on the site periphery. **Similar to P3**, this alternative would have less-than-significant impacts on common vegetation and wildlife species.

Because on-site habitat is degraded or non-existent, special-status plant species and habitats have no potential to be located on the site. Special-status wildlife species have a very low potential to be on the site; animals may use the site to travel between patches of remnant native habitat or to disperse in search of new, suitable habitat. There is a low potential for special-status plants, animals, or habitat to be present on developed and agricultural lands immediately adjacent to the site. Staff concludes that potential impacts on these resources would be **less than P3**; mitigation measures would be recommended to reduce potential impacts to less than significant.

No feature that could potentially be considered a jurisdictional wetland or other water is present on the site. This alternative is expected to have **no impact** on jurisdictional wetlands or other waters. This alternative would avoid filling the Coastal Commission jurisdictional wetlands on the P3 site.

Construction of the proposed project would include demolishing the MGS Units 1 and 2. Under the Ormond Beach Area Off-site Alternative, the existing MGS Units 1 and 2 would not necessarily be demolished and removed from the site following their decommissioning. Under this circumstance, MGS Units 1 and 2 would present potential nuisance nesting and perching opportunities for raptors and other predatory birds, which could lead to depredation of the federally endangered western snowy plover and California least tern nests on the dunes and beaches immediately northwest of the proposed project site. Under this off-site alternative, impacts on special-status nesting birds would be **greater than P3**. Assuming mitigation measures were not imposed to reduce the impact to less than significant, the impact on special-status birds would remain potentially significant and unavoidable.

The site is adjacent to the Ormond Beach Restoration Study Area (Study Area). Although the wetlands expansion is still being planned, the wetlands and marshes in the vicinity of the site are expected to support diverse and abundant species in the Study Area; surveys have documented the presence of several state and federally-listed birds (e.g., the western snowy plover (*Charadrius nivosus nivosus*), California least tern (*Sterna antillarum browni*), and Belding's savannah sparrow (*Passerculus sandwichensis beldingi*) (WRA Environmental Consultants 2007). However, suitable habitat for these species, such as beaches and dunes, are not present at or immediately adjacent to this off-site alternative.

Land uses near the Ormond Beach Area Off-site Alternative are mostly agricultural and developed or vacant disturbed land (similar to the Del Norte/Fifth Street Off-site

Alternative), and staff considers the surrounding areas to have limited nesting potential for birds. Common species that may nest in neighboring trees or buildings are acclimated to noises of human activities. Impacts on nesting birds during project construction are expected to be **less than P3**; mitigation measures would reduce potentially significant impacts to less than significant.

General construction impacts relating to dust, nighttime lighting, and the potential to spread invasive weeds could occur during construction of a project similar to P3 at the Ormond Beach Area Off-site Alternative. At the P3 project site, critical habitat and sensitive wetlands occur in the immediate vicinity of the project site. Although this alternative site is adjacent to the Study Area, the lands immediately abutting the west, north, and east sides of the site are intensively developed. Therefore, the area surrounding this alternative site is less biologically sensitive compared to the McGrath Lake area and wetlands north of the P3 site, or the dune habitat and beaches west of the P3 site. Impacts relating to construction and demolition are generally considered **less than P3**; mitigation measures would reduce potentially significant impacts to less than significant.

Project Operations Impacts

Noise impacts from operation of the proposed project are expected to be less than significant, requiring no noise mitigation measures. There is no known on-site critical habitat, nor known off-site critical habitat within audible range of this alternative site. Potential impacts from operational noise are expected to be **similar to P3** and less than significant.

The proposed P3 would deposit less-than-significant levels of nitrogen oxides (NOx) at the closest sensitive habitats such as the dunes west of the site and wetland habitat surrounding McGrath Lake, immediately north of the P3 site. The project site and vegetation within 1,000 feet of the site were mapped by the applicant and included in the AFC (NRG 2015a). While no similar mapping has occurred for this off-site alternative, staff's review of Google Earth imagery indicates potential dune habitat approximately 1,300 feet west of the Ormond Beach Area Off-site Alternative. This distance from the site to a sensitive habitat is similar to the proposed P3 site. Staff assumes that this off-site alternative would have the same operating profile as the proposed P3. Assuming the same general wind speed and direction, this alternative's air emissions would be similar to P3. Staff assumes that these emissions would have similar effects; therefore, nitrogen deposition from project operations at the Ormond Beach Area Off-site Alternative would be **similar to P3.**

This alternative would require installing a 220-kV transmission line to connect to the Ormond Beach Substation approximately 1 mile south of the site. The new transmission line could present an electrocution hazard to large raptors if not constructed according to the Avian Power Line Interaction Committee guidelines to protect raptors (Avian Power Line Interaction Committee 2006). This off-site alternative would be required to comply with the same guidelines to reduce potentially significant impacts on avian species to less than significant. Therefore, potential impacts on raptors from electrocution hazards would be **similar to P3**.

Cultural Resources

The Ormond Beach Area Off-site Alternative is vacant of buildings. Industrial facilities were on the proposed site until 2011 after which they were removed. A segment of rail line bordering the east side of the site could be an offshoot of the old Oxnard to Port Hueneme short line. The southern end of the railroad track breaks into two separate spur lines and ends on the southeast portion of the site. As stated above, Google Earth imagery from February 2016 shows that the site was recently graded; part of the remaining track may also have been removed from the site. Although it is not definitively known whether the spur is used at the subject property, the railroad appears to be unused or abandoned where it enters the site. However, the railroad may be actively used north of the site adjacent to an automobile distribution center.

The Ormond Beach Generating Station (dating to 1959) is located approximately three-quarter mile south of the Ormond Beach Area Off-site Alternative and approximately 2.5 miles southeast of Port Hueneme.

The archaeological and ethnographic setting presented in **Cultural Resources Appendix A** of this staff assessment applies also to this alternative.

Impacts on Surficial Archaeological and Ethnographic Resources

A review of historic topographic maps, archival Google Earth imagery, and maps of ethnographic villages did not reveal any surficial archaeological resources or ethnographic resources at the Ormond Beach Area Off-site Alternative. However, this general examination is not sufficient to reach conclusions regarding the presence, or lack thereof, of surficial archaeological resources and ethnographic resources. Therefore, it is **indeterminate** if any surficial archaeological resources or ethnographic resources could be impacted at the site and how such an impact (if it occurred) would compare to the proposed P3 site where no impact is identified.

Impacts on Buried Archaeological Resources

The Ormond Beach Area Off-site Alternative and the proposed P3 are both located on the large coastal alluvial fan of the Oxnard Plain, which is an environment suitable for preserving intact archaeological deposits. Without more specific information regarding the geomorphological character of the site and previous cultural resources work near and at the site, potential impacts on buried archaeological resources are unknown. Therefore, it is **indeterminate** if any buried archaeological resources could be impacted at the site and how such an impact (if it occurred) would compare to the proposed P3 site where this impact is considered potentially significant but mitigable.

Impacts on Built Environment Resources

No built environment resources of historic age have been identified at the Ormond Beach Area Off-site Alternative. However, staff has no survey data from which to draw conclusions. Without survey information about the transmission and pipeline routes and the precise locations of the transmission towers and pipelines, staff has insufficient information from which to draw conclusions on the potential for impacts on built

environment resources to occur under this alternative. It is unknown what potential impacts on the historic built environment could occur under the Ormond Beach Area Off-site Alternative and whether impacts could be reduced to less-than-significant levels. Therefore, it is **indeterminate** if any built environment resources could be impacted under this alternative and how such an impact (if it occurred) would compare to the proposed P3 site where no impact is identified.

Conclusion

It is unknown if the Ormond Beach Area Off-site Alternative would have the potential to cause impacts on surficial archaeological resources, buried archaeological resources, or known archaeological or ethnographic resources. Although no built environment resources of historic age are identified on the alternative site, it is unknown if impacts on built environment resources could occur due to the lack of survey data and unknown locations for constructing off-site linear facilities. Impacts on surficial archaeological resources, buried archaeological resources, known archaeological and ethnographic resources, and historic built environment resources from this off-site alternative are **indeterminate** compared to P3.

Geology and Paleontology

The Ormond Beach Area Off-site Alternative is located approximately one-half mile east of the coastline. The site is vacant of buildings. Site topography is flat and is underlain by sediments similar to the proposed P3 site. Under this alternative, ground disturbance would be somewhat greater than that required to construct the proposed P3; increased ground disturbance would occur during construction of foundations for transmission line structures and off-site trenching for natural gas and water pipelines.

Similar to P3, this alternative would have the potential to encounter and damage buried paleontological resources. Although the sedimentary materials underlying this off-site alternative have a limited potential to contain paleontological resources, if such resources are present, potential impacts could be significant. Implementation of a paleontological resources monitoring program such as the one described in the **Geology and Paleontology** section of this staff assessment would be required to reduce the impact to less than significant (see Conditions of Certification **PAL-1** through **PAL-8**). Staff concludes that the relative potential for paleontological resources to be damaged under this off-site alternative is **similar to P3**.

Like the proposed P3, this alternative would have **no impact** on mineralogical or geological resources because these resources are not present at the site or in areas where construction of linear facilities would occur.

Similar to P3, there are no known active faults on the alternative site or crossing areas where linear infrastructure would be installed. The potential risk relating to surface fault rupture under this alternative is less than significant, and the impact conclusion is the same for the proposed P3 at the MGS site.

The Ormond Beach Area Off-site Alternative would be subject to the same, very strong levels of earthquake-related ground shaking as the proposed P3. The potential risk of soil failure caused by liquefaction and/or dynamic compaction is **similar to P3** for this off-site alternative. These potential impacts could be reduced to less than significant with implementation of a mitigation measure such as the one recommended in the **Geology and Paleontology** section of this staff assessment (see Condition of Certification **GEO-2**).

This off-site alternative would be subject to a risk of potential excessive settlement or expansion of soils that is **similar to P3**. These potential impacts could be reduced to less than significant with implementation of a mitigation measure similar to Condition of Certification **GEO-2**.

As stated above, the proposed P3 could be at risk for inundation by tsunami. Under the proposed project, this impact is potentially significant. Although the Ormond Beach Area Off-site Alternative is a little over one-half mile from the coastline, it is outside the area that is subject to risk of inundation by tsunami; therefore, **no impact** would occur compared to the proposed project.

Hazardous Materials Management

The Ormond Beach Area Off-site Alternative would present a nearly identical hazardous materials risk profile as at the proposed P3 site. Both would use natural gas as fuel and ammonia for selective-catalytic reduction of oxides of nitrogen in the combustion exhaust. Since the hazardous risk profiles are similar, the Ormond Beach Alternative would present potentially significant impacts that could be mitigated to less than significant the **same as P3**.

Noise and Vibration

The nearest noise-sensitive receptors to the Ormond Beach Area Off-site Alternative are the residences that are located approximately one-half mile northwest of the center of this alternative site. The nearest noise-sensitive receptors to the proposed P3 site will be the new, residential community planned for development approximately one-half mile southeast of the MGS site. These distances are similar. Therefore, the construction and operational noise impacts of this off-site alternative would be **similar to P3**; and the impacts associated with this off-site alternative would be reduced to less than significant with implementation of appropriate mitigation measures.

Public Health

Construction and operation of a 262-MW natural gas-fired, simple-cycle power plant at the Ormond Beach Area Off-site Alternative would cause the same or similar impacts as P3. Under the proposed project, air emission impacts would occur from demolition of the MGS Units 1 and 2 and construction of the P3. Under this alternative, construction of buildings and structures would include water storage tanks, retention basins, ammonia tanks, a 220-kV switchyard and transmission line, and administration and warehouse/lab buildings. This off-site alternative is located in the same air basin as the proposed P3, the South Central Coast Air Basin. The proposed P3 and this off-site

alternative are located in the same local air district, the VCAPCD. The Ormond Beach Area Off-site Alternative would be subject to the same public health LORS as those that apply to the P3 site; a health risk assessment would be needed to ensure compliance with applicable LORS.

Construction-related impacts of Ormond Beach Area Off-site Alternative would be generally **similar to P3**. Operations-related impacts would also be **similar to P3** because the same air emissions rules and regulations would apply at this off-site location. The impact conclusion for the proposed P3 and this off-site alternative is less than significant. The MGS Unit 3 would continue operations as a permitted unit.

Socioeconomics

Unlike the P3, the Ormond Beach Area Off-site Alternative would require construction of a new 220-kV switchyard, two retention basins, and a transmission line connection to the Ormond Beach Substation approximately 1 mile south of the site. This construction would require an additional workforce and would extend the construction schedule beyond what would be required under the proposed project. The additional workers and lengthened schedule would likely be minimal compared with the workforce needs and length of work for the proposed P3. Because this alternative does not include demolition of MGS Units 1 and 2, but requires new linear components, the workers needed and length of work would largely balance out. If any additional workforce was needed, it would be easily met with the large labor pool in the Oxnard-Thousand Oaks-Ventura Metropolitan Statistical Area (Ventura County MSA) and Los Angeles-Long Beach-Glendale Metropolitan District (Los Angeles MD).

In 2012, there were over 124,500 construction and extraction trades workers in the Ventura County MSA and Los Angeles MD combined, with projections for a workforce increase of almost 25 percent by 2022. There were approximately 1,500 electric power line installation and repair workers in 2012 in the Ventura MSA and Los Angeles MD, combined, and a projected growth of almost 15 percent by 2020.

With the ample local workforce in the Ventura MSA and Los Angeles MD, there would be no substantial population growth or substantial increases in demand for parks or law enforcement services. This alternative site is undeveloped so there would be no displacement of substantial numbers of people or existing housing, necessitating the construction of replacement housing elsewhere. Impacts for this alternative would be less than significant and **similar to P3**.

Expenditures for additional equipment and construction labor necessary for construction at this alternative site would be slightly greater than those for P3. However, the estimated fiscal benefits of this alternative would be **similar to P3**.

Like the proposed P3, construction and operation of a power plant at this site would require Condition of Certification **SOCIO-2** to ensure payment of the one-time statutory school facility development fee to the Oxnard School District and to the Oxnard Union High School District and compliance with LORS.

Soil and Water Resources

The Ormond Beach Area Off-site Alternative is located within the city limits of Oxnard with access to Oxnard's potable water system and municipal wastewater system. Both the P3 site and this off-site alternative are in the jurisdictional region of the Los Angeles Regional Water Quality Control Board, and within the same coastal drainage area. The site is approximately one-half mile east of the coastline and roughly 7.5 miles south of the Santa Clara River. A 220-kV transmission line and a 36-inch diameter natural gas line are adjacent to the east edge of the site.

Water Quality Impacts during Project Construction

Although the site has been recently graded, staff assumes that the entire 14.5-acre site would require light grading for site preparation and construction laydown. Similar to the P3 site, excavation would occur to construct the reinforced concrete foundations for the power block, but the Ormond Beach Area Off-site Alternative does not have the same coastal requirement for deep foundations such as piles to support the foundation. This off-site alternative also does not have the existing infrastructure found at the P3 site, so additional construction would be required for new administration and warehouse/lab buildings, pads for various ancillary facilities, and two retention basins to collect storm water and process wastewater. Trenching to install underground pipelines would take place on-site to connect to the underground linear facilities (potable water, municipal wastewater system, and natural gas pipeline).

Compared to the P3 site, construction activities at the Ormond Beach Area Off-site Alternative would result in more earth work and a longer construction timeframe. As with the P3 site, construction activities are subject to construction-related storm water permit requirements of the federal Clean Water Act's NPDES permits, including California's Construction General Permit. Impacts on water quality would be minimized through compliance with the Construction General Permit and other applicable NPDES permits. Required implementation of specific best management practices (BMPs) for erosion control and wastewater management, in addition to numeric action levels (NALs) to evaluate the effectiveness of BMPs, would achieve minimum water quality standards. Although the larger construction area and longer construction time increases the potential for significant impacts at the Ormond Beach Area Off-site Alternative, these impacts would be reduced to less than significant, **similar to P3**.

Water Quality Impacts during Demolition

Demolition impacts at P3 would be reduced to less than significant through compliance with the Construction General Permit, which also regulates demolition activities. The Ormond Beach Area Off-site Alternative is undeveloped; therefore, no demolition would be required to develop the site. Compared to the P3 site, which proposes aboveground demolition of MGS Units 1 and 2, **no impact** would occur relating to potential impacts on water quality from demolition at this alternative site.

Potential Impacts from On-site and Off-site Flooding

Development of the Ormond Beach Area Off-site Alternative would not impact the course of a stream or river. For on-site storm water drainage, a similar storm water collection system proposed at the P3 site (which covers about 15.3 acres, including the MGS site) could likely manage storm water at this 14.5-acre off-site alternative. However, a site-specific drainage study is needed to evaluate the adequacy of on-site drainage management. Therefore, it is **indeterminate** if development at this alternative site would cause significant flood impacts or how these potential impacts would compare to those of the proposed P3.

Potential Flooding Hazard Based on Federal Emergency Management Agency Floodplain Delineation Maps

The FEMA flood hazard map shows that a large storm event would likely cause the Santa Clara River to flood adjacent land. Although this off-site alternative is located several miles outside the 1 percent annual chance flood hazard (also referred as the 100-year event floodplain), the 0.2 percent annual chance flood hazard (also referred as the 500-year event floodplain) encroaches into the northwest corner of the site. By comparison, the P3 site is located just outside the mapped 100-year floodplain, and the 500-year floodplain encroaches into the southwest corner of the site. Although this alternative site is well outside the 500-year floodplain, the Oxnard Plain is relatively flat with a remote chance of flooding. The site's less-than-significant impact of 1 percent annual chance flood hazard due to river flooding is comparable to the P3's less-than-significant impact of 1 percent annual chance flood hazard occurring from coastal flooding. Therefore, the potential flooding hazard is the **same as P3**, and the impact conclusion is less than significant.

Staff emphasizes that flood hazard analysis is based on official FEMA maps, which were last updated in 2010. FEMA is currently updating the flood hazard map for the Oxnard area, which could shift or otherwise change the shape and size of floodplains. The FSA will include updated information if preliminary FEMA maps are available at that time.

Water Quality Impacts from Wastewater Discharge

The Ormond Beach Area Off-site Alternative and the proposed P3 would use the same technology to achieve the same generating capacity. Therefore, the quantity and quality of generated wastewater are expected to be the same at both sites.

This off-site alternative is serviced by Oxnard's municipal wastewater system, which is expected to accept sanitary waste. Assuming the on-site system that manages process wastewater and storm water runoff can treat these flows to a water quality level acceptable to Oxnard, these flows would also discharge to the municipal wastewater system. Because the wastewater treatment plant is licensed and regulated under a WDR issued by the RWQCB, impacts would be reduced to less than significant.

Because the P3 site is not serviced by the municipal wastewater system, sanitary waste is managed through an existing septic system. Process wastewater and storm water

runoff are managed through the existing MGS collection system for treatment prior to discharge into the ocean. Both of these existing systems are currently operating under project-specific WDRs issued by the RWQCB, which reduces impacts to less than significant.

Although the proposed method of wastewater disposal is different at each site, the discharge of both sites would be regulated under their respective WDR permits requiring that treatment meet minimum water quality standards. Because wastewater of this off-site alternative would discharge to the municipal wastewater system, impacts would be reduced to less than significant, **similar to P3**.

Water Quality Impacts from Power Plant Operations

Potential impacts on water quality at the Ormond Beach Area Off-site Alternative would be less than P3 mainly due to its relative distance to water resources. Potential impacts on groundwater would also be less because this off-site alternative would require a connection to the municipal wastewater system. Despite a lower potential to impact water quality, the Ormond Beach Area Off-site Alternative would need to comply with the same requirements imposed on P3 such as a hazardous materials management program, spill control and prevention, and other measures to avoid or reduce the discharge of contaminants. With these requirements implemented, potential impacts on water quality would be **similar to P3**.

Potential Impacts on Potable Water Supplies

Under the Ormond Beach Area Off-site Alternative, operational water use is expected to equal that of the proposed P3. Water use at this off-site alternative would constitute a new use (maximum 19 acre-feet per year), while the combination of P3 development and MGS decommissioning would be a net reduction of current water use at the MGS facility. The City of Oxnard's "Water Neutrality Policy" requires that all new development offset its water demand. The decommissioning of MGS Units 1 and 2 could theoretically provide water to fully offset the new use at this off-site alternative. Therefore, **no impact** on water supply would occur.

Traffic and Transportation

Construction Workforce Traffic

The Ormond Beach Area Off-site Alternative would involve construction of additional ancillary buildings and structures, a new 220-kV switchyard, and removal of the existing on-site railroad spur, if any segment of the track remains on the site. However, P3 would generate more temporary vehicle trips overall due to demolition of MGS Units 1 and 2. Furthermore, for this off-site alternative, truck deliveries could potentially be reduced or eliminated if the project owner could use the existing railroad spur for deliveries up until the point of disconnection, as the spur could be intact partway into the site.

Existing traffic LOS in the vicinity of the Ormond Beach Area Off-site Alternative appears to be less impacted than in the vicinity of P3, which would also reduce this

alternative's construction traffic impacts on LOS. According to the Ventura County Traffic Commission's Congestion Management Plan, traffic on State Highway 1 in the project area moves relatively smoothly, meaning that construction traffic would not travel on an already congested area of the highway, in contrast to P3 (Ventura County Transportation Commission 2009).

Due to the better existing traffic LOS in the vicinity of the Ormond Beach Area Off-site Alternative and the additional demolition trips generated by P3, temporary impacts on LOS from this off-site alternative would be **less than P3**. Temporary traffic impacts from construction of this alternative would be potentially significant but could be mitigated to less than significant by implementing a traffic control plan and obtaining applicable encroachment permits for heavy loads.

Driver Safety

Construction vehicles exiting the Ormond Beach Area Off-site Alternative would likely turn right onto Arcturus Avenue to head north toward the freeway and urbanized areas. In this case, vehicles would not need to cross a lane of opposing traffic. Vehicles could also exit left onto eastbound E. McWane Boulevard, which would require crossing a lane of opposing westbound traffic. However, this opposing westbound traffic would be low volume and slow moving, as E. McWane Boulevard dead ends less than 1,000 feet west of the alternative site.

The risk of a dangerous collision would be lower under the Ormond Beach Area Off-site Alternative compared to the proposed P3. Under P3, many construction vehicles would exit the site by turning left to travel north on Harbor Boulevard, crossing an opposing lane of high-speed traffic in the process. Furthermore, the Ormond Beach Area Off-site Alternative would generate fewer vehicle trips that could potentially cross a lane of opposing traffic, as this alternative does not necessarily involve demolition of MGS Units 1 and 2. Therefore, driver safety impacts from the Ormond Beach Area Off-site Alternative would be **less than P3**. However, the risk could still be potentially significant. Driver safety impacts from the Ormond Beach Area Alternative could be mitigated to less than significant by requiring preparation and implementation of a traffic control plan.

Damage to Roads and Bridges

Construction of the Ormond Beach Area Off-site Alternative would require truck trips that could potentially damage roads. Impacts would be potentially significant but could be mitigated to less than significant with preparation and implementation of a traffic control plan, including a requirement to repair and restore damaged roads. Because P3 would require additional truck trips associated with demolition of MGS Units 1 and 2, the potential for damage to roads from this off-site alternative would be **less than P3**.

Operations Traffic

The same number of operations workers (17 workers) and truck deliveries would be used for the Ormond Beach Area Off-site Alternative and the proposed P3. The location of P3 would enable it to use existing MGS workers, while the location of the Ormond Beach Area Off-site Alternative would add new project operations vehicle trips to the

area. However, the number of operations workers and deliveries would be relatively small and would not generate significant impacts on traffic LOS. Due to the small number of operations workers and deliveries, impacts would be **similar to P3** and less than significant.

Potential Impact of Thermal Plumes on Aircraft and Pilot Safety

Like the proposed P3, the Ormond Beach Area Off-site Alternative would generate high-velocity thermal plumes that could be hazardous to aircraft flying directly overhead at sufficiently low altitudes. Naval Air Station (NAS) Point Mugu, the nearest airport, is approximately 3 miles southeast of the Ormond Beach Area Off-site Alternative; however, it is unlikely that military aircraft would fly directly over the site. Aircraft from NAS Point Mugu would likely fly west to the "Sea Range," a military training and testing area over the Pacific Ocean off the coast of California that stretches approximately from the United States/Mexico border at its southern end to the Cambria and San Simeon area at its northern end. A military training route called IR200 links the Sea Range with the military area located at China Lake (Naval Air Warfare Center Weapons Division 2014). This military training route does not pass over the Ormond Beach Area Off-site Alternative site.

However, aircraft from other airports could potentially fly directly over the alternative site. Potential impacts on pilot safety could be mitigated to less than significant by adding a remark to applicable FAA aviation maps and documents and by issuing a Notice to Airmen warning pilots to avoid overflight of the site. Aircraft and pilot safety impacts from this off-site alternative would be **less than P3**, given the greater distances of airports from the Ormond Beach Area Off-site Alternative compared to the proposed P3 (less than 2 miles from the Oxnard Airport), making overflight of the alternative site at low altitudes less likely.

Transmission Line Safety and Nuisance

The transmission line for the Ormond Beach Area Off-site Alternative would be designed and constructed in conformance with applicable LORS.

Impacts on Aviation Safety *Relating to Location of Transmission Lines*

Staff assessed the potential for aviation hazards with regard to: a) the height of the proposed transmission structures, and b) distances and orientation with respect to identified runways. According to Title 14 of the Code of Federal Regulations, Section 77.9(b)(1), for construction or alterations within 20,000 feet (3.8 miles) of an airport with a runway longer than 3,200 feet, the FAA shall be notified if the height of the construction or alteration exceeds an imaginary surface extending outward and upward at a slope of 100 to 1 from the nearest point of the nearest runway of the airport.

The Ormond Beach Area Off-site Alternative is approximately 6 miles southwest of the Camarillo Airport and 4 miles southeast of the Oxnard Airport. These distances do not require FAA notification. However, as discussed above under, "Potential Impact of Thermal Plumes on Aircraft and Pilot Safety," NAS Point Mugu is located approximately 3 miles (15,840 feet) southeast of this off-site alternative, within the FAA's distance for

potential notification of the FAA. Staff calculated that the threshold for FAA notification at the Ormond Beach Area Off-site Alternative would be a structure height of 158 feet. The 100-foot-tall transmission structures would be below this threshold, and would therefore not require FAA notification and a subsequent FAA obstruction hazard review. The transmission structures under this alternative would be further below the FAA notification threshold height than the transmission structures for the proposed P3, which, while also below the FAA notification threshold height, are closer to it.

Also, Google Earth imagery shows that the main runway at NAS Point Mugu is oriented southwest/northeast. Based on the military training route described above, staff assumes that aircraft departing and arriving at NAS Point Mugu would not be flying at low altitudes over the area of the Ormond Beach Area Off-site Alternative.

For the reasons discussed above, staff concludes that the potential impact on aviation safety relating to the location and height of transmission structures is **less than or similar to P3**, and the impact conclusion is less than significant.

Interference with Radio-Frequency Communication

The Ormond Beach Substation is located less than 1 mile south of this off-site alternative. A potential route for the 220-kV transmission line under this alternative is undetermined, but the most direct route would be along the Edison Drive ROW. Noise and interference are generally not problems for well-maintained transmission lines, and there are no residences in the area between the Ormond Beach Area Off-site Alternative and the substation. Staff would not expect any corona-related radio-frequency interference or complaints under this off-site alternative. **Similar to P3**, this impact would be less than significant.

Potential for Transmission Lines to Cause Audible Noise

Audible noise is not generally expected at significant levels from transmission lines less than 345 kV. Therefore, staff would not expect the transmission line for this off-site alternative to add significantly to current background noise levels, and **no impact** would occur.

Potential Fire Hazards

Like the proposed P3, the Ormond Beach Area Off-site Alternative would comply with "Fire Prevention Standards for Electric Utilities" (Cal. Code Regs., tit. 14, § 1250 et seq.). This impact is potentially significant and **similar to P3**. Compliance with applicable LORS and implementation of mitigation measures would reduce the impact to less than significant (see Condition of Certification **TLSN-3** in the **Transmission Line Safety and Nuisance** section of this staff assessment).

Potential for Hazardous and Nuisance Shocks

The transmission line for this off-site alternative would be constructed in conformance with the requirements of CPUC's GO-95, "Rules for Overhead Line Construction," and minimum standards for installation, operation, and maintenance of electrical installation and equipment to provide practical safety and freedom from danger ("High Voltage

Electrical Safety Orders") (Cal. Code Regs. tit. 8, § 2700, et seq.). Therefore, hazardous shocks are highly unlikely to occur from construction and operation of the Ormond Beach Area Off-site Alternative. The potential for nuisance shocks around the transmission line would be minimized through standard industry grounding practices. Impacts relating to hazardous and nuisance shocks are **similar to P3**, and implementation of mitigation measures would reduce impacts to less than significant (see Conditions of Certification **TLSN-1** and **TLSN-4** in the **Transmission Line Safety and Nuisance** section of this staff assessment).

Potential for Electric and Magnetic (EMF) Exposure

The potential impact relating to EMF exposure is **similar to P3**, and implementation of mitigation measures like those recommended under the proposed P3 would reduce the impact to less than significant (see Conditions of Certification **TLSN-1** and **TLSN-2** in the **Transmission Line Safety and Nuisance** section of this staff assessment).

Visual Resources

Staff concludes that the proposed P3 would have less-than-significant impacts relating to its potential to adversely impact a scenic vista or scenic resources of a state scenic highway. No scenic vistas are identified near the Ormond Beach Area Off-site Alternative. This off-site alternative is not near a state-designated scenic highway. Therefore, under the Ormond Beach Area Off-site Alternative, these impacts are **similar to P3**.

The approximately 14.5-acre Ormond Beach Area Off-site Alternative is an undeveloped and graded industrial site that is being used for parking of new KIA vehicles. **Alternatives Figure 10** shows the site looking northeast from Arcturus Avenue near its intersection with E. McWane Boulevard. The building associated with Aluminum Precision Products on the property east of the site is visible beyond the rows of parked automobiles. The high-voltage transmission line that parallels Edison Drive is visible in the background. **Alternatives Figure 11** provides a view east along E. McWane Boulevard from a viewpoint approximately one block west of Arcturus Avenue. The roads bordering the site are not major travel corridors and no roads near the site are listed on Oxnard's inventory of scenic routes.

Similar to the Del Norte/Fifth Street Off-site Alternative, the landscape in the vicinity of the Ormond Beach Area Off-site Alternative is characterized by large utilitarian structures and related industrial uses adjacent to agricultural fields and open space areas. The estimated VAC of the landscape is *moderate* (using a general comparative scale of low, moderate, and high). Based on staff's observations during a site visit in April 2016, the area near this off-site alternative is at the southern edge of an industrial area that is somewhat removed from areas with higher public access and use. Visual sensitivity of the viewing public in the immediate vicinity of the site is estimated to be *low to moderate*.

The open space and agricultural areas immediately south of the site do not include publicly accessible recreational use areas. Ormond Beach is a little over one-half mile

from this off-site alternative. **Alternatives Figure 12** shows the view south toward the OBGS from Arcturus Avenue. Public access to Ormond Beach is provided at two places, including Perkins Road (1 mile north of the OBGS) and Arnold Road (close to 1 mile south of the OBGS). Ormond Beach is identified as an “undeveloped site” in the City of Oxnard General Plan (City of Oxnard 2006). Although the visual sensitivity of visitors to the beach is expected to be *high*, the site is set back from the beach and would not dominate views in the same way as the existing OBGS, which is prominently visible to viewers along the beach north and south of the site.

The closest residential area to the Ormond Beach Area Off-site Alternative is the Villa Cesar Chavez development, approximately one-half mile northwest of the alternative site. **Alternatives Figure 13** provides a view south-southeast in the general direction of the Ormond Beach Area Off-site Alternative. Buildings associated with the industrial and warehouse commercial businesses west of Arcturus Avenue partially block the view south from this viewpoint, although portions of the OBGS stacks are visible in the background. The signalized crossing of the Ventura County Railway at E. Hueneme Road is visible in the foreground.

The Ormond Beach Area Off-site Alternative would modify existing visual conditions and introduce power plant structures at the site that would be clearly visible from the surrounding area. Major structural elements of the proposed P3 include the combustion turbine generator (107 feet long, 52 feet wide, and 79 feet high); nitrogen oxide removal equipment (87 feet long, 33 feet wide, and 99 feet high); and the stack (22 feet in diameter and 188 feet high) (NRG 2015a). Other structures would include 100-foot-tall transmission structures. However, compared to the proposed P3, this off-site alternative would be set back approximately one-half mile from the publicly accessible beach. The closest major travel corridor to the site is Hueneme Road, approximately one-half mile north of the site.

Staff compared this off-site alternative to the proposed P3 and assessed its potential to substantially degrade the existing visual character or quality of the site and its surroundings. Staff considered baseline visual conditions for the P3 at the MGS site, which includes aging power plant structures adjacent to Mandalay State Beach and McGrath State Beach. The existing MGS is the most visually dominant built structure along several miles of the coast extending north and south of the P3 site. The estimated VAC of the landscape is *low* for the P3 site. The proposed P3 would generally entail construction of a power block with less mass and height compared to the existing MGS Units 1 and 2, which would be demolished and removed from the site under the proposed project. The primary viewer groups in public use areas near the P3 site are residents, recreationists, and visitors at nearby open space areas. The nearest residential development is approximately one-half mile south of the project site, and residents have unobstructed views of the existing power plant. In general, visual sensitivity of the viewing public is expected to be *high* for the P3 compared to the estimated *low to moderate* visual sensitivity for this off-site alternative.

Staff’s comparative analysis considers the following major points:

- The proposed P3 at the MGS site would be less visually imposing compared to the existing MGS Units 1 and 2, which would be demolished and removed from the site.
- Staff assumes that visual sensitivity is *high* in the coastal area where the P3 would be constructed and operated, and the landscape's VAC is *low*.
- Using the Ormond Beach Area Off-site Alternative to construct and operate a project similar to the P3 would introduce a power plant at a site in an industrial area with less direct public exposure compared to the proposed project.
- Staff assumes that visual sensitivity is *low to moderate* in the area surrounding the Ormond Beach Area Off-site Alternative site, and the landscape's VAC is *moderate*.

Although many properties in the vicinity of this off-site alternative are used for industrial purposes, and visual sensitivity is considered *low to moderate*, construction and operation of a power plant at the Ormond Beach Area Off-site Alternative could become the most visually prominent (i.e., tallest) industrial-type facility in the area. Because this alternative site is in an established industrial area with less direct public exposure compared to the P3, staff concludes the potential for this off-site alternative to substantially degrade the existing visual character or quality of the site and its surroundings to be **less than P3**, and the impact conclusion is potentially significant. Implementation of mitigation measures requiring surface treatments and possibly other visual screening measures would reduce the impact to less than significant for this off-site alternative. Mitigation measures could include constructing a decorative fence or wall to screen street-level views of the site and architectural screening for the upper portions of the power block structures.

Demolition and removal of MGS Units 1 and 2 is not necessarily assumed to occur under the Ormond Beach Area Off-site Alternative. If the MGS Units 1 and 2 remained nonoperational on the site, the potential to cause substantial degradation of the existing visual character or quality of the P3 site and its surroundings would generally be **greater than P3**, and the impact would remain significant and unavoidable. Because MGS Units 1 and 2 would be demolished and removed from the site under the P3, this is an impact that would not occur under the proposed P3.

Exterior permanent lighting of a power plant similar to the P3 at the Ormond Beach Area Off-site Alternative would be limited to areas required for safe and secure operations. Light sensors or switches would control lighting not required continuously during nighttime hours so that lighting would be on only when needed. Light fixtures would be directed downward and shielded to avoid off-site backscatter and glare. Staff considers the potential for the new source of substantial light or glare to adversely affect day or nighttime views in the area of this off-site alternative to be **similar to P3**. Mitigation measures similar to those proposed for the P3 would reduce the impact to less than significant.

Waste Management

LORS are enforced at the local level to ensure recycling and safe disposal of solid and hazardous waste, and these LORS would apply also to wastes generated under the

Ormond Beach Area Off-site Alternative. Therefore, the potential for impacts on human health and the environment from potential waste discharges relating to this off-site alternative would be the **same as P3**.

This off-site alternative would require construction of ancillary buildings and structures, such as water storage tanks, retention basins, ammonia tanks, and an administration and warehouse/lab buildings. A new 220-kV switchyard would need to be constructed at the site. This work would generate additional construction waste that would not be generated under the proposed P3. The project owner would be required to comply with the waste management mitigation measures and applicable LORS to minimize impacts on waste disposal facilities; therefore, the potential for disposal or diversion of project materials to cause impacts on existing waste disposal or diversion facilities would be **similar to P3**.

Although the Ormond Beach Area Off-site Alternative is currently undeveloped, it has recently been graded and surfaced with gravel or a similar material. Based on historical Google Earth imagery, structures remained on the site until approximately late 2009 or 2010. Although details on previous uses and the site history are unknown, based on past industrial uses and other industrial uses surrounding the site (except for the area to the south), it appears that there is a potential for the site to be contaminated. Ground disturbance during construction could encounter contamination. Therefore, potential impacts on human health and the environment relating to past or present soil or water contamination from this alternative would be the **same as P3**.

The Ormond Beach Area Off-site Alternative would have potentially significant impacts on waste management, but all of those impacts can be reduced to less than significant with implementation of mitigation measures and through LORS compliance.

Worker Safety and Fire Protection

The Ormond Beach Area Off-site Alternative would have the same worker safety and fire protection requirements as the proposed P3. Since the requirements are the same, this off-site alternative would present potentially significant impacts that could be mitigated to less than significant the **same as P3**.

CONCEPTUAL SITE RECONFIGURATION ALTERNATIVES

Staff created two conceptual site reconfigurations of the proposed P3 on the site to avoid filling 2.03 acres of Coastal Commission jurisdictional wetlands on the northwest portion of the site. Construction and operation of the proposed P3 inside the existing MGS site is assumed for either conceptual site reconfiguration. All municipal infrastructure and services that would serve and support the proposed P3 at the MGS site would be available under both site reconfigurations.

Under Conceptual Site Reconfiguration 1, the P3 power block would be constructed on the northeast portion of the site (**Alternatives Figure 14**). Construction parking and laydown and shop areas would be clustered in the center of the site around the existing 19,000-square-foot warehouse. Under Conceptual Site Reconfiguration 2, the P3 power

block would be constructed in the approximate center of the MGS site, which would require relocating the existing warehouse on the site (**Alternatives Figure 15**). Existing MGS Units 1 and 2 would remain operational until the end of 2020. MGS Unit 3 would continue operating. Like the proposed P3, MGS Units 1 and 2 would be decommissioned, demolished, and removed from the site under either conceptual site reconfiguration alternative.

Potential to Attain Project Objectives

The applicant's basic project objectives specify developing a 262-MW simple-cycle, natural gas-fired combustion turbine at the existing MGS site that would use existing infrastructure and other MGS maintenance facilities. Staff has devised two site reconfiguration concepts, and either would require the applicant to redesign the site plan for the project, which would likely delay the project schedule. If moving the power block on the site to avoid the wetlands was feasible, a site reconfiguration alternative could potentially satisfy most if not all of the applicant's project objectives. The applicant has included a project objective to design, permit, build, and commission the P3 by June 2020. The CPUC's Track 1 decision addresses procuring resources to replace retiring OTC generators and meet LCR needs by 2021. Assuming that the process to redesign the project did not severely impact the project schedule, a site reconfiguration alternative could potentially satisfy all of the project objectives.

Potential Feasibility Issues

In addressing feasibility of alternatives, various factors may be taken into account. Like the proposed P3, the two conceptual site reconfigurations would use existing infrastructure on the MGS site, which is owned and controlled by NRG. Like the proposed P3, a reconfigured alternative would interconnect to the transmission grid at the adjacent 220-kV SCE switchyard. The MGS property covers 36 acres, including the 3-acre portion proposed for developing the P3. A large portion of the existing site is occupied by MGS Units 1, 2, and 3; the existing ammonia storage area; and the basins for wastewater and storm water runoff, and these existing facilities reduce the potential available development area. However, given the overall size of the property, redesigning the site plan to move the power block and other facilities on the site is considered potentially feasible, and redesigning the site plan to avoid the wetlands is unlikely to jeopardize project viability.

Environmental Analysis

Alternatives Table 6 presents a summary comparison of impacts of the proposed P3 to the same or similar potential impacts of Conceptual Site Reconfigurations 1 and 2. The analysis below is focused on potential environmental effects that would be different under this alternative compared to the proposed P3.

This alternative does not require new analysis, changes to conclusions, or new or revised mitigation measures for several environmental topic areas. For the following topic areas, no comparative analysis of impacts is necessary:

- Hazardous Materials Management

- Socioeconomics
- Transmission Line Safety and Nuisance
- Waste Management
- Worker Safety and Fire Protection

For other potential environmental effects, summary discussions are provided below comparing the impacts of Conceptual Site Reconfigurations 1 and 2 to the proposed P3.

Alternatives Table 6
Summary Comparison of Impacts of the Proposed P3
to Conceptual Site Reconfigurations 1 and 2

Environmental Effect	Proposed P3	Site Recon-figuration 1	Site Recon-figuration 2
Air Quality			
Construction-related emissions	PSM	Similar to P3 (PSM)	Similar to P3 (PSM)
Project operations emissions	PSM	Similar to P3 (PSM)	Similar to P3 (PSM)
Greenhouse Gases (construction- and demolition-related impacts)	PSM	Similar to P3 (PSM)	Similar to P3 (PSM)
Biological Resources			
Project construction and demolition impacts			
Impact on jurisdictional wetlands and other waters	SM	—	—
Impacts on common vegetation species	LS	Similar to P3 (LS)	Similar to P3 (LS)
Impacts on common wildlife species	LS	Similar to P3 (LS)	Similar to P3 (LS)
Impact of noise on nesting birds	PSM	Similar to P3 (PSM)	Similar to P3 (PSM)
Impacts on special-status plants	PSM	Similar to P3 (PSM)	Similar to P3 (PSM)
Impacts on special-status wildlife *(see note)*	PSM	Similar to P3 (PSM)	Similar to P3 (PSM)
Impacts on special-status birds with MGS Units 1 and 2 left on site	—	—	—
Impacts of dust, nighttime lighting, and invasive weeds on biological resources	PSM	Similar to P3 (PSM)	Similar to P3 (PSM)
Biological resources note: excluding nesting birds			
Project operations impacts			
Impacts on biological resources relating to nitrogen deposition	LS	Similar to P3 (LS)	Similar to P3 (LS)
Impact relating to potential electrocution of avian species	PSM	Similar to P3 (PSM)	Similar to P3 (PSM)
Cultural Resources			
Impacts on surficial archaeological resources	—	—	—
Impacts on buried archaeological resources	PSM	Same as P3 (PSM)	Same as P3 (PSM)
Impacts on identified archaeological and ethnographic resources	—	—	—
Impacts on built environment resources	—	—	—

Alternatives Table 6
Summary Comparison of Impacts of the Proposed P3 to Conceptual Site Reconfigurations 1 and 2

Environmental Effect	Proposed P3	Site Recon-figuration 1	Site Recon-figuration 2
Geology and Paleontology			
Risk of damage to paleontological resources	PSM	Similar to P3 (PSM)	Similar to P3 (PSM)
Potential impacts on geological or mineralogical resources	—	—	—
Risk of surface fault rupture	LS	Same as P3 (LS)	Same as P3 (LS)
Risk of liquefaction, dynamic compaction, and lateral spread from strong seismic shaking	PSM	Same as P3 (PSM)	Same as P3 (PSM)
Risk of potential excessive settlement or expansion of soils causing an impact on structures	PSM	Same as P3 (PSM)	Same as P3 (PSM)
Risk of inundation by tsunami resulting from an earthquake or local submarine landslide	PSM	Same as P3 (PSM)	Same as P3 (PSM)
Noise and Vibration			
Potential noise impacts at noise-sensitive locations	PSM	Similar to P3 (PSM)	Greater than P3 (PSM)
Public Health			
Construction-related diesel particulate matter (DPM) emissions	LS	Similar to P3 (LS)	Similar to P3 (LS)
Project operations-related toxic air contaminants (TACs) emissions	LS	Similar to P3 (LS)	Similar to P3 (LS)
Soil and Water Resources			
Water quality impacts during project construction	PSM	Same as P3 (PSM)	Similar to P3 (PSM)
Water quality impacts during demolition	PSM	Same as P3 (PSM)	Similar to P3 (PSM)
Potential impacts from on-site and off-site flooding	PSM	Same as P3 (PSM	Same as P3 (PSM)
Potential flooding hazard based on Federal Emergency Management Agency floodplain delineation maps *(see note)*	LS	Same as P3 (LS)	Same as P3 (LS)
Water quality impacts from wastewater discharge	SM	Same as P3 (SM)	Same as P3 (SM)
Water quality impacts from power plant operations	PSM	Same as P3 (PSM)	Same as P3 (PSM)
Potential impacts on potable water supplies	—	—	—
Water resources note: Based on current FEMA mapping effective 2010. May change when updated map is released in 2016.			
Traffic and Transportation			
Potential impacts from increased construction workforce traffic that is substantial compared to the existing traffic load and capacity of the street system	PSM	Same as P3 (PSM)	Same as P3 (PSM)
Potential for increased workforce traffic to cause driver safety impacts during project demolition and/or construction	PSM	Same as P3 (PSM)	Same as P3 (PSM)
Potential for increased workforce traffic to damage roads and bridges during project demolition and/or construction	PSM	Same as P3 (PSM)	Same as P3 (PSM)
Potential impacts from increased traffic during project	LS	Same as P3	Same as P3

Alternatives Table 6
Summary Comparison of Impacts of the Proposed P3
to Conceptual Site Reconfigurations 1 and 2

Environmental Effect	Proposed P3	Site Recon-figuration 1	Site Recon-figuration 2
operation (i.e., post-construction traffic) that is substantial compared to the existing traffic load and capacity of the street system		(LS)	(LS)
Potential impacts from thermal plumes on aircraft and pilot safety	PSM	Similar to P3 (PSM)	Similar to P3 (PSM)
Visual Resources			
Substantial adverse effect on a scenic vista	LS	Same as P3 (LS)	Same as P3 (LS)
Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway	LS	Same as P3 (LS)	Same as P3 (LS)
Substantially degrade the existing visual character or quality of the site and its surroundings			
KOPs 1, 4, and 5	LS	Same as P3 (LS)	Same as P3 (LS)
KOP 2	LS	Similar to P3 (LS)	Similar to P3 (LS)
KOP 3	PSM	Similar to P3 (PSM)	Similar to P3 (PSM)
Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area	PSM	Same as P3 (PSM)	Same as P3 (PSM)

Air Quality

Demolition- and construction-related impacts associated with the reconfigured site alternatives are expected to be **similar to P3**. Although the reconfigured site alternatives would affect the project schedule, the air emissions assumptions used to predict short-term (e.g., 1-hr and 24-hr averaging times, etc.) and long-term impacts (e.g., annual averaging times) are expected to be **similar to P3**. Construction and commissioning work and activities would occur in the same general area as the proposed P3. Reconfiguring the power block on the site under either alternative reconfiguration would entail shifting the power block to just east or southeast of the proposed P3's orientation on the site. Operations-related impacts are expected to be similar for both the proposed P3 and the reconfigured site alternatives. However, due to the relocation of emission sources on the MGS site, dispersion modeling would need to be conducted in order to quantitatively compare the impacts of the reconfigured site alternatives with the proposed P3 site. Staff concludes that both construction-related impacts and operations-related impacts relating to Conceptual Site Reconfigurations 1 and 2 would likely be **similar to P3**. Impacts relating to GHG emissions would also be **similar to P3**. Potentially significant impacts on air quality can be reduced to less than significant with implementation of the same mitigation measures as those proposed for P3.

Biological Resources

Conceptual Site Reconfigurations 1 and 2 would require redesigning the plan for the power block structures and other facilities on the site. Like the proposed P3, either site reconfiguration would include demolishing MGS Units 1 and 2. Under either site reconfiguration, all biological resources impacts would be **similar to P3**, with one exception. Conceptual Site Reconfigurations 1 and 2 would avoid impacts on approximately 2.03 acres of Coastal Commission jurisdictional wetlands. Under the proposed P3, the wetlands would require habitat compensation at a mitigation ratio of 2:1. Under the two site reconfigurations, **no impact** on the wetlands would occur, and no habitat compensation would be required.

Cultural Resources

Under Conceptual Site Reconfiguration 1, the major components of P3 would be moved closer to Harbor Boulevard and adjacent to the existing SCE substation. The Site Reconfiguration 1 area was surveyed in January 2015, and no cultural resources were identified during the survey. The change in site layout under Site Reconfiguration 1 would not change the impact conclusions compared to the proposed P3 because no cultural resources have been identified on the site. For Site Reconfigurations 1 and 2, the potential to encounter buried archaeological resources is the **same as P3**. If such resources were identified on the site, appropriate mitigation measures would reduce impacts to less than significant.

Conceptual Site Reconfiguration 2 would move the P3 power block to the middle of the site between the SCE substation and the existing MGS. And it would require relocating the existing warehouse/shop building and other small, ancillary buildings and structures on the site. No buildings on the MGS property have been identified as eligible for listing on the CRHR.

Under Conceptual Site Reconfigurations 1 and 2, potential impacts on surficial and buried archaeological resources, known archaeological and ethnographic resources, and built environment resources would be the **same as P3**.

Geology and Paleontology

Conceptual Site Reconfigurations 1 and 2 would require relocating power block structures and other facilities on the site. MGS Unit 3 would remain in place on the site. These activities would result in an insignificant increase in site disturbance during project construction for potential impacts on geological and paleontological resources.

Similar to P3, Conceptual Site Reconfigurations 1 and 2 would have the potential to encounter and damage buried paleontological resources. Implementation of a paleontological resources monitoring program such as the one described in the **Geology and Paleontology** section of this staff assessment would be required to reduce the impact to less than significant (see Conditions of Certification **PAL-1** through **PAL-8**). Staff concludes that the potential for paleontological resources to be damaged under either site reconfiguration is **similar to P3**.

Like the proposed P3, Conceptual Site Reconfigurations 1 and 2 would have **no impact** on mineralogical or geological resources because these resources are not present at the site.

No known active faults are located on or near the MGS and proposed P3 site; therefore, the potential risk relating to surface fault rupture under Conceptual Site Reconfigurations 1 and 2 is the **same as P3** and the impact is less than significant.

Conceptual Site Reconfigurations 1 and 2 would be subject to the same, very strong levels of earthquake-related ground shaking as the proposed P3. The potential risk of soil failure caused by liquefaction and/or dynamic compaction is the **same as P3**. These potential impacts could be reduced to less than significant with implementation of a mitigation measure such as the one recommended in the **Geology and Paleontology** section of this staff assessment (see Condition of Certification **GEO-2**).

The site reconfiguration alternatives would be subject to a risk of potential excessive settlement or expansion of soils that is the **same as P3**. These potential impacts could be reduced to less than significant with implementation of a mitigation measure similar to Condition of Certification **GEO-2**.

As stated above, the proposed P3 could be at risk for inundation by tsunami. Under the proposed project, this impact is potentially significant. Under the No-Project Alternative, the risk of inundation by tsunami is the **same as P3**.

Noise and Vibration

Conceptual Site Reconfiguration 1 would not alter the power block's approximate distances to the project's closest noise-sensitive receptors. Therefore, this site reconfiguration's noise impacts would be **similar to P3**, and the same mitigation measures would be required to reduce potentially significant impacts to less than significant.

Conceptual Site Reconfiguration 2 would locate the power block closer to the noise-sensitive receptors nearest to the site, which is the new, residential community being planned southeast of the project site. Therefore, this site reconfiguration's noise impacts would be somewhat **greater than P3.** Additional mitigation measures could be needed to lower power plant noise and reduce the potentially significant impact to less than significant.

Public Health

Conceptual Site Reconfigurations 1 and 2 would each include demolishing existing MSG Units 1 and 2 and would have impacts on public health that are **similar to P3**.

Construction-related impacts associated with either site reconfiguration alternative are expected to be **similar to P3**. Although either of the two site reconfigurations would require changing the construction schedule, assumptions for air emissions used to predict short-term (e.g., 1-hr and 24-hr averaging times, etc.) and long-term (e.g., annual averaging times) impacts from toxic air contaminants are expected to be **similar**

to P3. Additionally, project construction and commissioning activities would occur in the same general area as the proposed P3.

Operations-related impacts for Conceptual Site Reconfigurations 1 and 2 are also expected to be **similar to P3** because the project site footprint would be shifted just east of the proposed P3 site. However, due to the relocation of emission sources either to the center portion or northeast portion of the site, an updated health risk assessment would need to be conducted to ensure compliance with the public health LORS or to quantitatively compare the impacts of the reconfigured site alternatives with the proposed P3 site. Staff concludes that for either site reconfiguration alternative, construction-related impacts and operations-related impacts would likely be **similar to P3**, and the impact conclusions are less than significant.

Soil and Water Resources

Because both Conceptual Site Reconfigurations 1 and 2 would use the same equipment to provide the same generating capacity on the existing MGS site, nearly all impacts under either site reconfiguration would be the **same as P3**. The exception to this is a difference of potential construction and demolition impacts of Conceptual Site Reconfiguration 2 due to the relocation of the warehouse/shop building.

Under the proposed P3, the warehouse/shop building would remain in place, whereas Conceptual Site Reconfiguration 2 would require demolition of the existing building and construction of a new building elsewhere on the site. Compared to the P3 site, demolition and construction activities would result in more earth work and a longer period of soil disturbance, which would increase the potential for significant construction-related impacts on water quality to occur. However, minimum water quality standards would be achieved through required implementation of specific BMPs for erosion control and wastewater management, with NALs to monitor and evaluate their effectiveness. As a result, these impacts would be reduced to less than significant, **similar to P3**.

Traffic and Transportation

For all potential roadway traffic related impacts, Conceptual Site Reconfigurations 1 and 2 would not change the number of construction traffic trips, construction routes, or any other feature that would temporarily affect traffic LOS compared to the proposed P3. Temporary construction-related traffic impacts on LOS would be the **same as P3**. These impacts would be potentially significant but could be mitigated by implementing a traffic control plan and obtaining applicable encroachment permits for heavy loads. Similarly, impacts relating to driver safety and damage to roads and bridges under the two site reconfiguration would be the **same as P3**.

The two site reconfigurations would not change the number of operations trips or the routes travelled to access the site. The number of operations workers and truck trips would be minimal and would cause less than significant impacts on traffic LOS. Permanent impacts on traffic LOS relating to project operations and maintenance would be the **same as P3** and the impact conclusion is less than significant.

Similar to the proposed P3, Conceptual Site Reconfigurations 1 and 2 would generate a thermal plume that would cause a potentially significant impact on aircraft and pilot safety. However, this impact could be mitigated to less than significant by adding a remark to applicable FAA aviation maps and documents and by issuing a Notice to Airmen warning pilots to avoid overflight of the site.

The technology used would be the same as for P3, so the characteristics of the thermal plume would remain the same. The relocation of the combustion turbine generator stack from the northwest side of the property under P3 to either the northeast or middle portion of the property under the site reconfigurations would move the plume slightly closer to the Oxnard Airport. However, the difference in distance from the airport would be minimal and would not create appreciably greater impacts on pilot safety. Impacts on pilot safety would be **similar to P3**.

Visual Resources

Staff concludes that the proposed P3 would have less-than-significant impacts relating to its potential to adversely impact a scenic vista or scenic resources of a state scenic highway. Under either Conceptual Site Reconfiguration 1 or 2, these impacts are the **same as P3**.

Under Conceptual Site Reconfiguration 1, the P3 power block would be moved further away from the beach but closer to Harbor Boulevard, a primary travel route near the coast. Under Conceptual Site Reconfiguration 2, the P3 power block would be moved to the central part of the site between existing MGS Units 1 and 2 and the SCE substation. The power block at the project site for either of the conceptual site reconfigurations would be prominently visible for views from adjacent travel routes and residential and recreational use areas.

Staff compared the two conceptual site reconfigurations to the proposed P3 and evaluated the potential for either site reconfiguration to substantially degrade the existing visual character or quality of the site and its surroundings. It is necessary to consider baseline visual conditions at the MGS site, which includes aging power plant structures at the project site. For KOPs 1, 4, and 5 for the proposed P3, staff concludes that the visual resources impacts are less than significant (see the **Visual Resources** section of this staff assessment). Compared to the proposed project, Conceptual Site Reconfigurations 1 and 2 would be the **same as P3**, and the impact conclusion is less than significant.

KOP 2 provides a view of the project site from Mandalay State Beach from a viewpoint over one-quarter mile south of the site. Under the proposed P3, staff concludes that the impact at KOP 2 is less than significant. Compared to the proposed project, the visual impact of Conceptual Site Reconfigurations 1 and 2 would be **similar to P3,** and the impact conclusion is less than significant.

KOP 3 is located on McGrath State Beach less than 1,000 feet from the project site. Staff has identified a potentially significant impact at KOP 3 under the proposed project. Staff recommends Condition of Certification **VIS-1** requiring preparation and

implementation of a surface treatment plan for project buildings, structures, and equipment. Compared to the proposed project, the visual impact of Conceptual Site Reconfigurations 1 and 2 would be **similar to P3,** and the impact conclusion is potentially significant.

Under Conceptual Site Reconfigurations 1 and 2, permanent exterior lighting of the power block and other structures at the site would be essentially the same as P3. Staff considers the potential for a new source of substantial light or glare to adversely affect day or nighttime views in the area to be the **same as P3**. Mitigation measures like those proposed for the P3 would reduce the impact to less than significant.

ENVIRONMENTALLY SUPERIOR ALTERNATIVE

NO-PROJECT ALTERNATIVE

Because the existing MGS Units 1 and 2 would be shut down and decommissioned to comply with the OTC Policy, the No-Project Alternative would avoid or greatly reduce significant impacts during demolition and construction and from project operations. Decommissioning Units 1 and 2 would not require any earth movement, soil disturbance, or work below site grade. Under the proposed P3, these impacts are reduced to less than significant with implementation of conditions of certification and through LORS compliance:

- **Air Quality** – Demolition, construction, and project operations emissions would be avoided
- **Biological Resources**
    - Impact on jurisdictional wetlands would be avoided
    - Impacts of noise on nesting birds; and potential impacts on special-status plants, animals, and habitats would be avoided during project demolition and construction
    - Impact relating to potential electrocution of avian species would be avoided
- **Cultural Resources** – Impacts on buried archaeological resources would be avoided
- **Geology and Paleontology** – Risk of damage to paleontological resources would be avoided
- **Hazardous Material Management**
    - Risk of fire or explosion off-site from natural gas usage during project operations would be greatly reduced
    - Risk of hazardous materials spill off the site during transport to the site would be greatly reduced

    - Risk of hazardous materials spill or migration off the site from storage or use on the site would be greatly reduced
- **Noise and Vibration** – Potential noise impact at noise-sensitive locations would be avoided
- **Soil and Water Resources**
    - Impacts on water quality during project demolition and construction would be avoided
    - Potential impact from on-site and off-site flooding relating to site grading, construction of impervious surfaces, or other changes to drainage patterns would be avoided
    - Impact of wastewater discharge from power plant operations would be reduced
- **Transmission Line Safety and Nuisance** – Impact from generated fields and non-field impacts from project operations
- **Waste Management**
    - Potential for demolition and construction wastes to impact waste disposal or diversion facilities would be avoided
    - Potential impacts on human health and the environment from removal of wastes of release of on-site contaminants would be avoided
- **Worker Safety and Fire Protection** – Potential impact relating to the risk of off-site fire and/or explosion from use of natural gas would be avoided

Due to the lack of visual screening at the MGS site, impacts relating to the substantial degradation of the existing visual character or quality of the site and its surroundings would be **greater than P3** at KOPs 2 and 3 under the No-Project Alternative. Because the Energy Commission would have no discretionary authority over the MGS site, including requiring surface treatments or removing Units 1 and 2 from the site, mitigation measures would not be imposed to reduce these visual impacts to less than significant.

Under the No-Project Alternative, visual impacts at KOPs 2 and 3 at the MGS site could remain *significant and unavoidable*. Because staff cannot predict the level of lighting that could occur at the site, staff concludes that potential nighttime lighting impacts at the site are **indeterminate** for the No-Project Alternative.

Due to the potential for the decommissioned MGS Units 1 and 2 to present nesting and perching opportunities for raptors and other predatory birds, staff concludes that the No-Project Alternative could lead to depredation of western snowy plover and California least tern nests on beaches and dunes adjacent to the site. This impact is **greater than P3** and the impact conclusion remains *significant and unavoidable*.

Under the No-Project Alternative, staff is unable to predict or foresee what other action might be taken that could potentially convert all or a portion of the MGS site to another use. In the absence of the Energy Commission's approval of a license to construct and operate a power plant at the site, another proposed future use of the MGS power plant site would be subject to review and approval of a coastal development permit by the City. It is assumed that future land use agreements or property division or sale would include removal of some of the existing power block structures and infrastructure. In this circumstance, significant impacts on biological resources and visual resources from the existing MGS Unit 1 and 2 power block structures remaining on the site would not persist.

Under the No-Project Alternative, the potential impacts of thermal plumes on aircraft and pilot safety would be **less than P3**. Because staff has no data on the thermal plumes generated during operation of MGS Units 1 and 2, which could continue operating through 2020, the comparative impact conclusion for the No-Project Alternative is **indeterminate**.

ALTERNATIVE SITES

Del Norte/Fifth Street Off-site Alternative

Staff compared the impacts of the Del Norte/Fifth Street Off-site Alternative to the same or similar impacts of the proposed P3. This off-site alternative assumes constructing and operating a project similar to the P3 at this alternative site. It assumes no construction and operation of the P3 at the MGS site.

Potentially Significant Impact Avoided at the Alternative Site

Staff identifies one *potentially significant* geological resources impact under the proposed P3 that is avoided under the Del Norte/Fifth Street Off-site Alternative:

- **Geology and Paleontology** – Risk of inundation by tsunami resulting from an earthquake or local submarine landslide

Staff concludes that under variable conditions and due to its coastal location, the proposed P3 could be at risk for inundation by tsunami. The Del Norte/Fifth Street Off-site Alternative is outside the coastal area that is subject to a potential risk of inundation by tsunami (approximately 7 miles inland); therefore, *no impact* would occur compared to the proposed project.

Significant and Unavoidable Impacts That Would Occur at the Alternative Site

For one environmental impact that is considered *potentially significant* under the proposed P3, the Del Norte/Fifth Street Off-site Alternative would cause a significant impact that is **greater than P3**:

- **Traffic and Transportation** – Potential impacts from thermal plumes on aircraft and pilot safety

Staff concludes that arrival and departure tracks for aircraft using Camarillo Airport (approximately 1.4 miles from the site) could expose pilots and aircraft to thermal plumes that would be generated by a power plant at the Del Norte/Fifth Street Off-site Alternative. This impact is significant and no feasible mitigation measures are identified to reduce the impact on aircraft and pilot safety to less than significant; therefore, the impact would remain *significant and unavoidable*.

For one environmental impact that is considered *less than significant* under the proposed P3, this off-site alternative would cause a significant impact that is *potentially significant and unavoidable*:

- **Transmission Line Safety and Nuisance** – Impacts on aviation safety relating to location of transmission lines

Staff concludes that the transmission structures would exceed the threshold for FAA notification (73.9 feet). Potential impacts on aircraft safety would be **greater than P3**. The impact conclusion is *potentially significant and unavoidable*, depending on whether the FAA determined that the transmission structures would present an obstruction hazard.

Less Than Significant P3 Impact That Would Be Greater Than P3 at the Alternative Site (Reduced to Less Than Significant with Mitigation)

For one environmental impact that is considered *less than significant* under the proposed P3, the Del Norte/Fifth Street Off-site Alternative would cause a potentially significant impact that is **greater than P3**. This impact would be reduced to *less than significant* with implementation of mitigation measures similar to those recommended by staff for the proposed P3 and through LORS compliance:

- **Transmission Line Safety and Nuisance** – Potential for corona-related radio-frequency interference or complaints due to the longer 220-kV transmission line route under this alternative

Potentially Significant P3 Impact That Would Be Less Than P3 (and Less Than Significant) at the Alternative Site

For one Biological Resources impact that is considered *potentially significant* under the proposed P3, the corresponding impact for the Del Norte/Fifth Street Off-site Alternative would be *less than significant*:

- **Biological Resources** – Impacts on special-status plants and habitat

The area in the vicinity of the Del Norte/Fifth Street Off-site Alternative is either developed or in use for agricultural production. Staff's review of the California Natural Diversity Database revealed no documented occurrences of listed species on or near the alternative site. There is a low likelihood for special-status plants, animals, or habitat to be present in the developed and agricultural areas immediately surrounding the site, and staff concludes that potential impacts on these resources would be **less than P3** and *less than significant*.

Impacts Peculiar to This Off-site Alternative Assuming No Demolition and Removal of MGS Units 1 and 2

Staff identifies two environmental impacts that could occur under the Del Norte/Fifth Street Off-site Alternative with Units 1 and 2 remaining nonoperational on the MGS site as part of the assumptions for this off-site alternative:

- **Biological Resources** – Impacts on special-status birds with MGS Units 1 and 2 left on site
- **Visual Resources** – Impacts on visual resources with MGS Units 1 and 2 left on site

Due to the potential for the decommissioned MGS Units 1 and 2 to present nesting and perching opportunities for raptors and other predatory birds, Biological Resources staff concludes that this off-site alternative (like the No-Project Alternative) could lead to depredation of western snowy plover and California least tern nests on beaches and dunes adjacent to the P3 site. This impact is **greater than P3**, and the impact could remain *significant and unavoidable*.

Visual Resources staff concludes that the potential to cause substantial degradation of the existing visual character or quality of the P3 site and its surroundings would generally be **greater than P3**, and the impact could remain *significant and unavoidable* under the Del Norte/Fifth Street Off-site Alternative.

Less Than Significant P3 Impact That Would Not Occur at the Alternative Site

Biological Resources staff concludes that the P3 would deposit *less-than-significant* levels of NOx at the closest sensitive habitats to the site. While no similar mapping has occurred for this off-site alternative, staff's review of available resources identified no sensitive habitat within several miles of the site. Staff concludes there would be *no impact* on sensitive resources from nitrogen deposition at the Del Norte/Fifth Street Off-site Alternative:

- **Biological Resources** – Impacts on biological resources relating to nitrogen deposition

Comparative Impacts That Are Indeterminate

Biological Resources staff has observed a natural bottom drainage ditch that appears to cross a portion of the northern third of the Del Norte/Fifth Street Off-site Alternative, perpendicular to E. Fifth Street. Staff has insufficient information to evaluate the resource and is also unable to conclude whether a project at this site could be designed to avoid the potential waters of the state (i.e., the on-site drainage ditch). Therefore, the potential for this alternative to effect waters of the state is **indeterminate**. This alternative would avoid filling the Coastal Commission jurisdictional wetlands on the P3 site.

Soil and Water Resources staff has determined that a site-specific drainage study would be needed to evaluate the adequacy of on-site drainage management for a project at

the Del Norte/Fifth Street Off-site Alternative. Therefore, it is **indeterminate** if development at this alternative site would cause significant flood impacts or how these potential impacts would compare to those of the proposed P3.

Potential impacts on Cultural Resources are **indeterminate** for this off-site alternative, and staff does not have the survey data needed to reach comparative conclusions.

Ormond Beach Area Off-site Alternative

Staff compared the impacts of the Ormond Beach Area Off-site Alternative to the same or similar impacts of the proposed P3. This off-site alternative assumes constructing and operating a project similar to the P3 at this alternative site. It assumes no construction and operation of the P3 at the MGS site.

Significant Impacts Avoided at the Alternative Site

Staff identifies three environmental impacts under the proposed P3 that are avoided under the Ormond Beach Area Off-site Alternative.

For one Biological Resources impact that is considered *significant* under the proposed P3, the corresponding impact for the Ormond Beach Area Off-site Alternative would not occur:

- **Biological Resources** – Impact on jurisdictional wetlands and other waters

The proposed P3 would fill 2.03 acres of Coastal Commission jurisdictional wetlands on the northwest portion of the P3 site. This alternative site was previously developed with industrial facilities, and it was recently graded and surfaced with gravel as a parking area for new automobiles. No jurisdictional wetland or other water is present on the alternative site; therefore, the impact on jurisdictional wetlands or other waters is avoided and *no impact* would occur compared to the P3.

Staff identifies one *potentially significant* impact relating to geological resources under the proposed P3 that is avoided under the Ormond Beach Area Off-site Alternative:

- **Geology and Paleontology** – Risk of inundation by tsunami resulting from an earthquake or local submarine landslide

Staff concludes that under variable conditions and due to its coastal location, the proposed P3 could be at risk for inundation by tsunami. Although the Ormond Beach Area Off-site Alternative is a little over one-half mile from the coastline, it is outside the area that is subject to risk of inundation by tsunami; therefore, this impact is avoided, and *no impact* would occur compared to the P3.

Staff identifies one *potentially significant* impact on water quality under the proposed P3 that is avoided under the Ormond Beach Area Off-site Alternative:

- **Soil and Water Resources** – Water quality impacts during demolition

Demolition impacts at P3 would be reduced to less than significant through compliance with the Construction General Permit, which also regulates demolition activities. Because the Ormond Beach Area Off-site Alternative is undeveloped, no demolition would be required to develop the site. Therefore, *no impact* would occur relating to potential impacts on water quality from demolition at this alternative site.

Significant Impact Reduced at the Alternative Site

Staff evaluated comparative impacts on Visual Resources. Construction and operation of a power plant at the Ormond Beach Area Off-site Alternative could become the most visually prominent industrial-type structure in areas adjacent to the site, although the existing OBGS is highly visible from this alternative site and other nearby viewpoints. However, this off-site alternative is set back approximately one-half mile from Ormond Beach, and it would be located in an industrial area with less direct public exposure compared to the P3 site. Staff concludes the potential for this off-site alternative to significantly impact visual resources to be **less than P3** for this impact criterion:

- **Visual Resources** – Substantially degrade the existing visual character or quality of the site and its surroundings

Unlike the proposed P3, which has one *significant and unavoidable* impact at KOP 3, staff concludes that mitigation measures could feasibly reduce visual impacts at this alternative site to less than significant.

As discussed above, the OBGS Units 1 and 2 will possibly be retired by the end of 2020 to meet the OTC Policy compliance date schedule. If the existing OBGS was subsequently demolished and removed from its site adjacent to Ormond Beach, the overall impact of visually prominent industrial-type facilities in the vicinity of this off-site alternative would be reduced.

Impacts Peculiar to This Off-site Alternative Assuming No Demolition and Removal of MGS Units 1 and 2

Staff identifies two environmental impacts that could occur under the Ormond Beach Area Off-site Alternative with Units 1 and 2 remaining nonoperational on the MGS site as part of the assumptions for this alternative:

- **Biological Resources** – Impacts on special-status birds with MGS Units 1 and 2 left on site
- **Visual Resources** – Impacts on visual resources with MGS Units 1 and 2 left on site

Due to the potential for the decommissioned MGS Units 1 and 2 to present nesting and perching opportunities for raptors and other predatory birds, Biological Resources staff concludes that this off-site alternative (like the No-Project Alternative) could lead to depredation of western snowy plover and California least tern nests on beaches and dunes adjacent to the P3 site. This impact is **greater than P3** and the impact could remain *significant and unavoidable*.

Visual Resources staff concludes that the potential to cause substantial degradation of the existing visual character or quality of the P3 site and its surroundings would generally be **greater than P3**, and the impact could remain *significant and unavoidabl*e under the Ormond Beach Area Off-site Alternative.

Comparative Impacts That Are Indeterminate

Soil and Water Resources staff has determined that a site-specific drainage study would be needed to evaluate the adequacy of on-site drainage management for a project at the Ormond Beach Area Off-site Alternative. Therefore, it is **indeterminate** if development at this alternative site would cause significant on-site or off-site flood impacts and how these potential impacts would compare to those of the proposed P3.

Potential impacts on Cultural Resources are **indeterminate** for this off-site alternative, and staff does not have the survey data needed to reach comparative conclusions.

CONCEPTUAL SITE RECONFIGURATIONS 1 AND 2

Each of the two conceptual site reconfigurations of the proposed P3 would avoid filling 2.03 acres of Coastal Commission jurisdictional wetlands on the northwest portion of the site. Like the proposed P3, MGS Units 1 and 2 would be decommissioned, demolished, and removed from the site under either conceptual site reconfiguration alternative.

Significant Impact Avoided With Reconfiguration of the P3 Structures

For one Biological Resources impact that is considered *significant* under the proposed P3, the corresponding impact would not occur under Conceptual Site Reconfigurations 1 and 2:

- **Biological Resources** – Impact on jurisdictional wetlands and other waters

The proposed P3 would fill 2.03 acres of Coastal Commission jurisdictional wetlands on the northwest portion of the P3 site. Assuming reconfiguring the power block and some of the related structures on the site is technically feasible, either site reconfiguration would avoid filling the on-site wetlands, and *no impact* on the wetlands would occur.

Staff concludes that all other environmental impacts would be the **same as P3** or **similar to P3**.

CONCLUSIONS

Several environmental impacts relating to project operations would be avoided under the No-Project Alternative. If avoiding the environmental effects of project operations is a critical factor, then the No-Project Alternative would be environmentally superior to the proposed P3. The No-Project Alternative would not attain any of the project's basic objectives.

Visual resources impacts would be greater under the No-Project Alternative, and staff concludes the impacts at KOPs 2 and 3 at the MGS site could remain *significant and*

unavoidable. Due to the potential for the decommissioned MGS Units 1 and 2 to present nesting and perching opportunities for raptors and other predatory birds, staff concludes that the No-Project Alternative could cause *significant and unavoidable* impacts on special-status birds nesting near the site. These impacts could outweigh the project's operational impacts that would be avoided if the proposed P3 does not go forward.

The significant and unavoidable impacts on special-status birds and visual resources would persist as long as the MGS Units 1 and 2 remained nonoperational. Staff concludes that the No-Project Alternative is *not* considered environmentally superior to the proposed P3. Except for the visual impact at KOP 3, all of the proposed project's impacts relating to project construction and operation can be reduced to less than significant with implementation of recommended conditions of certification. If MGS Units 1 and 2 were demolished and removed from the site, the No-Project Alternative would be environmentally superior to the P3.

The Del Norte/Fifth Street Off-site Alternative would avoid one *potentially significant* geological resources impact of the proposed P3. Under this off-site alternative, *no impact* would occur from the risk of inundation by tsunami resulting from an earthquake or local submarine landslide. Under the proposed P3, this impact is reduced to *less than significant* with conditions of certification imposed. This off-site alternative would cause a *significant impact* relating to Traffic and Transportation due to the potential impacts of thermal plumes on aircraft and pilot safety; no feasible mitigation measures are identified to reduce the severity of this impact, which would remain *significant and unavoidable*. This alternative would cause a *significant impact* relating to Transmission Line Safety and Nuisance if the FAA determined that the transmission structures presented an obstruction hazard that could impact aviation safety; the impact conclusion is *potentially significant and unavoidable*. Therefore, the Del Norte/Fifth Street Off-site Alternative is *not* considered environmentally superior to the proposed P3. This off-site alternative could potentially satisfy four of the applicant's eight project objectives.

The Ormond Beach Area Off-site Alternative would avoid three significant effects of the proposed P3 without causing other significant effects. Impacts that would be avoided include filling of jurisdictional wetlands and other waters, risk of inundation by tsunami, and temporary water quality impacts during demolition. Regarding potential Visual Resources impacts, staff concludes that the potential to substantially degrade the existing visual character or quality of the site and its surroundings is **less than P3**, and the impact conclusion is potentially significant. Mitigation measures could feasibly reduce visual impacts at this alternative site to less than significant. This alternatives analysis considers many factors in comparing the project alternatives to the proposed P3. If avoiding the three significant effects of the proposed P3 and reducing the overall visual effect are critical factors, then the Ormond Beach Area Off-site Alternative would be environmentally superior to the proposed P3. This off-site alternative could potentially satisfy five of the applicant's eight project objectives.

Conceptual Site Reconfigurations 1 and 2 would avoid filling 2.03 acres of Coastal Commission jurisdictional wetlands. If avoiding the on-site wetlands is a critical factor,

then either of the site reconfigurations would be environmentally superior to the proposed P3. No other environmental impacts would be reduced or avoided by reconfiguring the power plant facilities on the P3 site. Reconfiguring the site would not create any new environmental impacts compared to the proposed P3. Either site reconfiguration would likely attain the basic project objectives.

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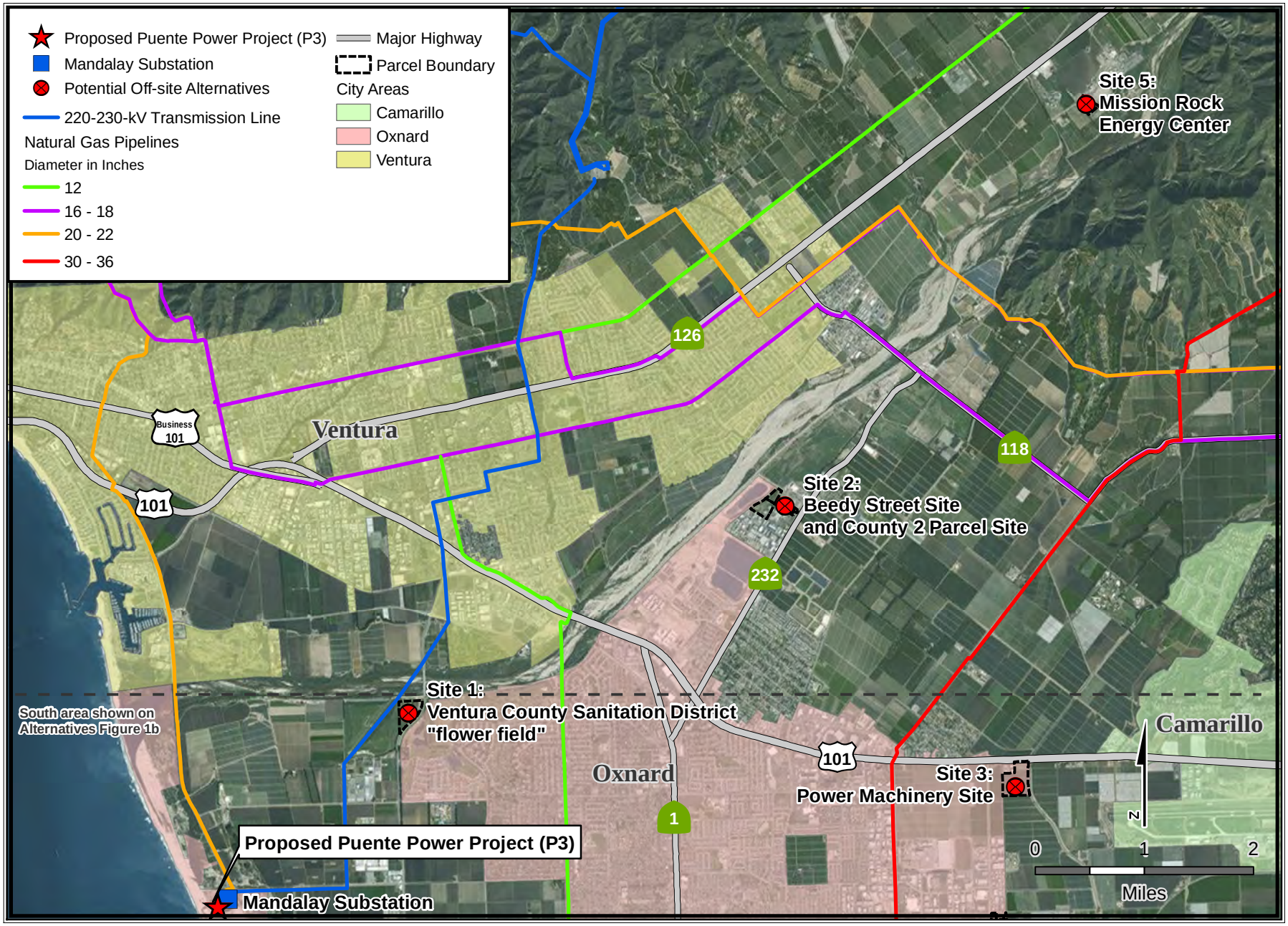
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ALTERNATIVES - FIGURE 1a

Puente Power Project - Potential Off-site Alternatives Identified by the City of Oxnard (North Map)



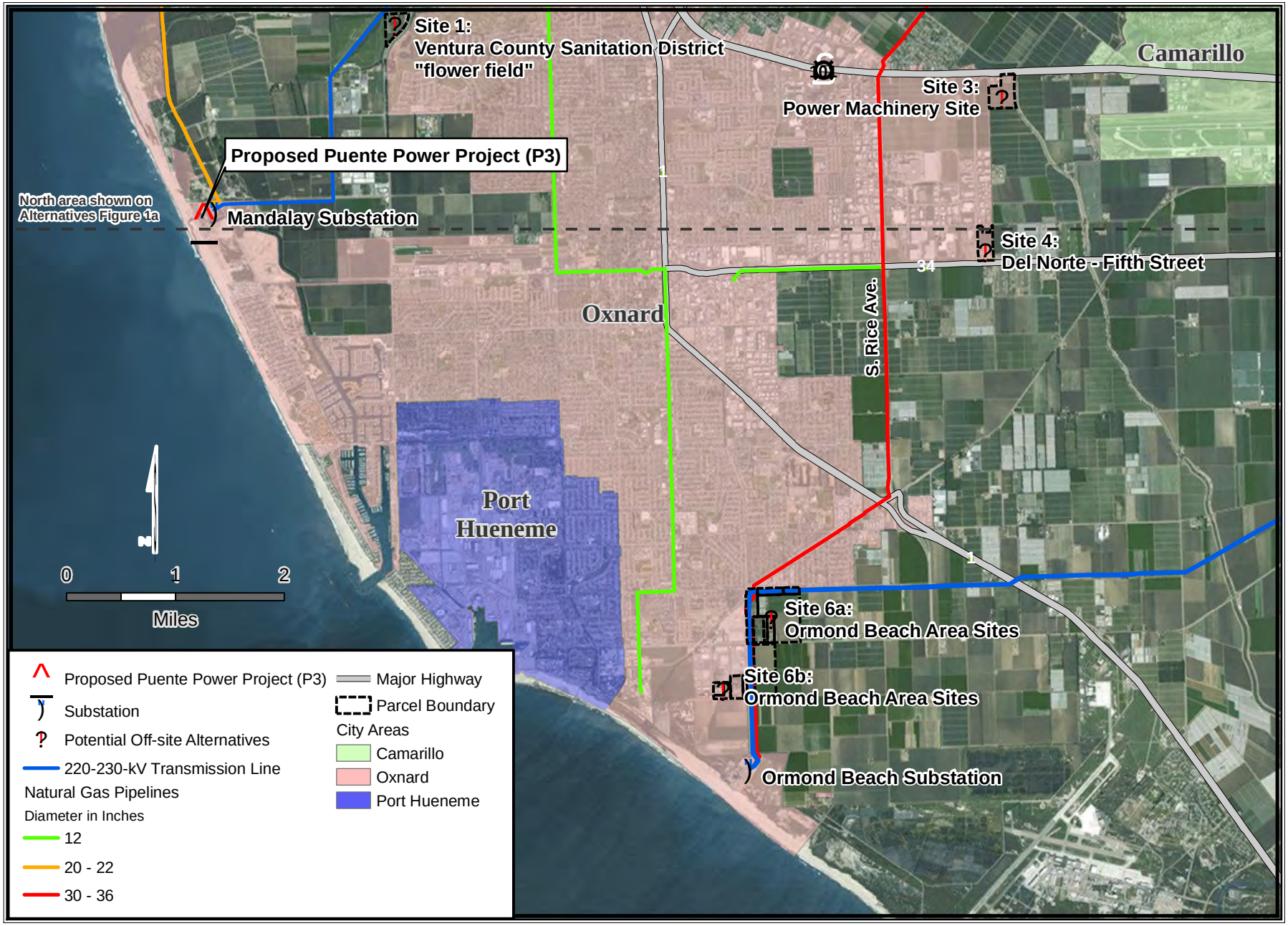
ALTERNATIVES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: ESRI Imagery, California Department of Transportation Data, Ventura County, City of Oxnard

ALTERNATIVES - FIGURE 1b

Puente Power Project - Potential Off-site Alternatives Identified by the City of Oxnard (South Map)



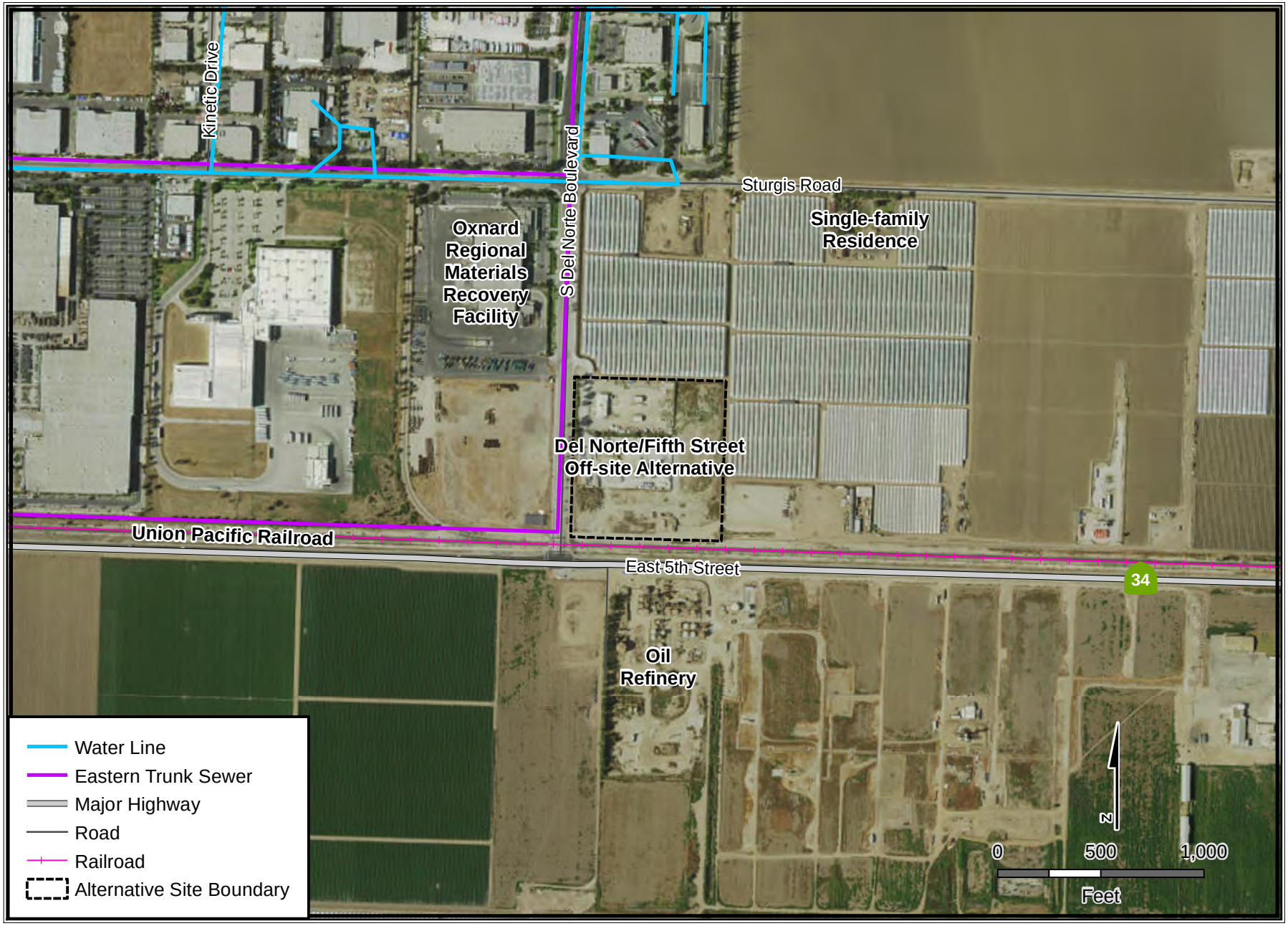
ALTERNATIVES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: ESRI Imagery, California Department of Transportation Data, Ventura County, City of Oxnard

ALTERNATIVES - FIGURE 2

Puente Power Project - Del Norte/Fifth Street Off-site Alternative



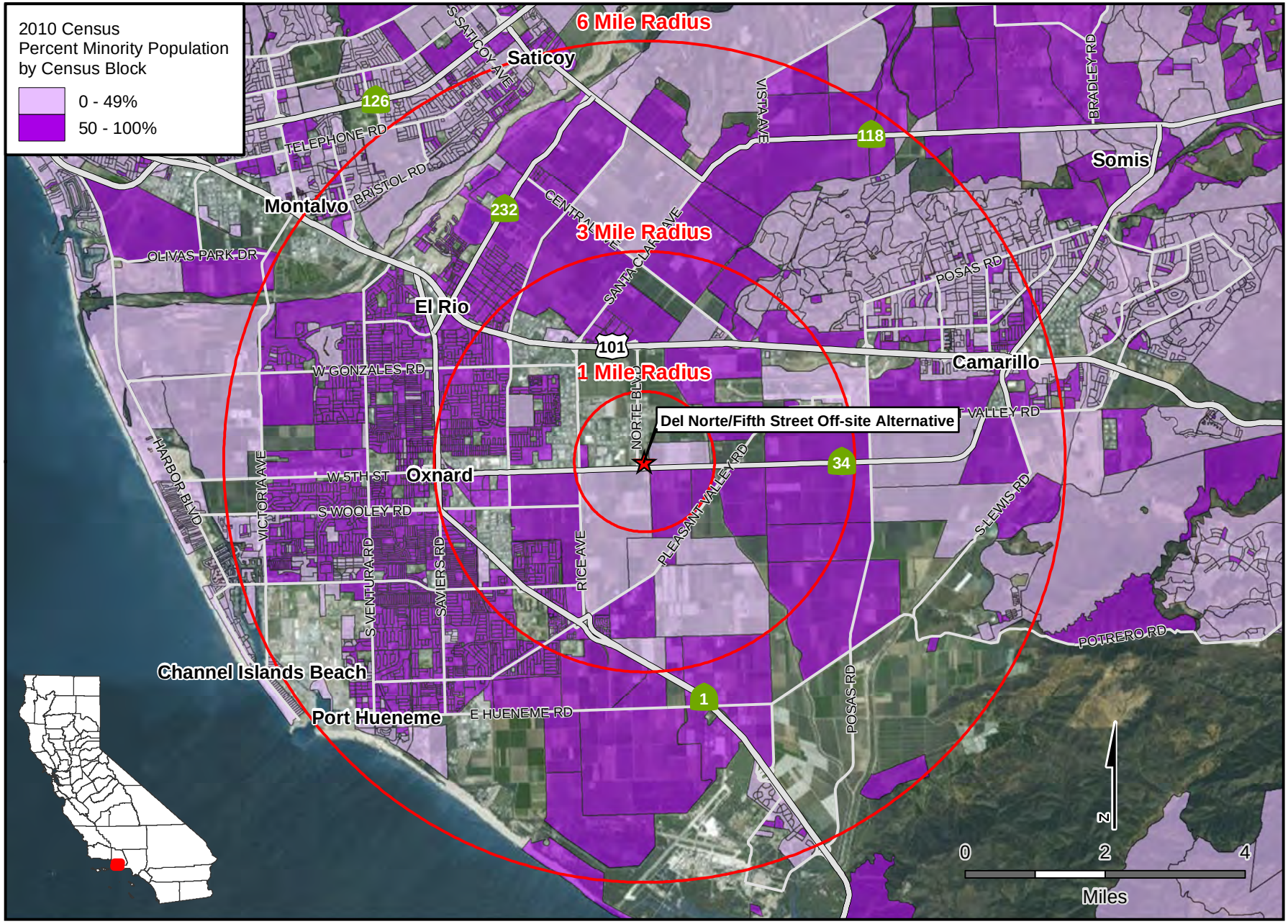
ALTERNATIVES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: ESRI Imagery, California Department of Transportation Data, Ventura County, City of Oxnard Planning & Environmental Services 2006

ALTERNATIVES - FIGURE 3

Puente Power Project - Census 2010 Minority Population by Census Block for the Del Norte/Fifth Street Off-site Alternative



ALTERNATIVES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Census 2010 PL 94-171 Data

ALTERNATIVES - FIGURE 4

Puente Power Project - View North toward the Del Norte/Fifth Street Off-site Alternative from E. Fifth Street



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Energy Commission Staff

ALTERNATIVES - FIGURE 5

Puente Power Project - View South along S. Del Norte Boulevard toward E. Fifth Street



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Energy Commission Staff

ALTERNATIVES - FIGURE 6

Puente Power Project - View Northwest from E. Pleasant Valley Road toward the Del Norte/Fifth Street Off-site Alternative

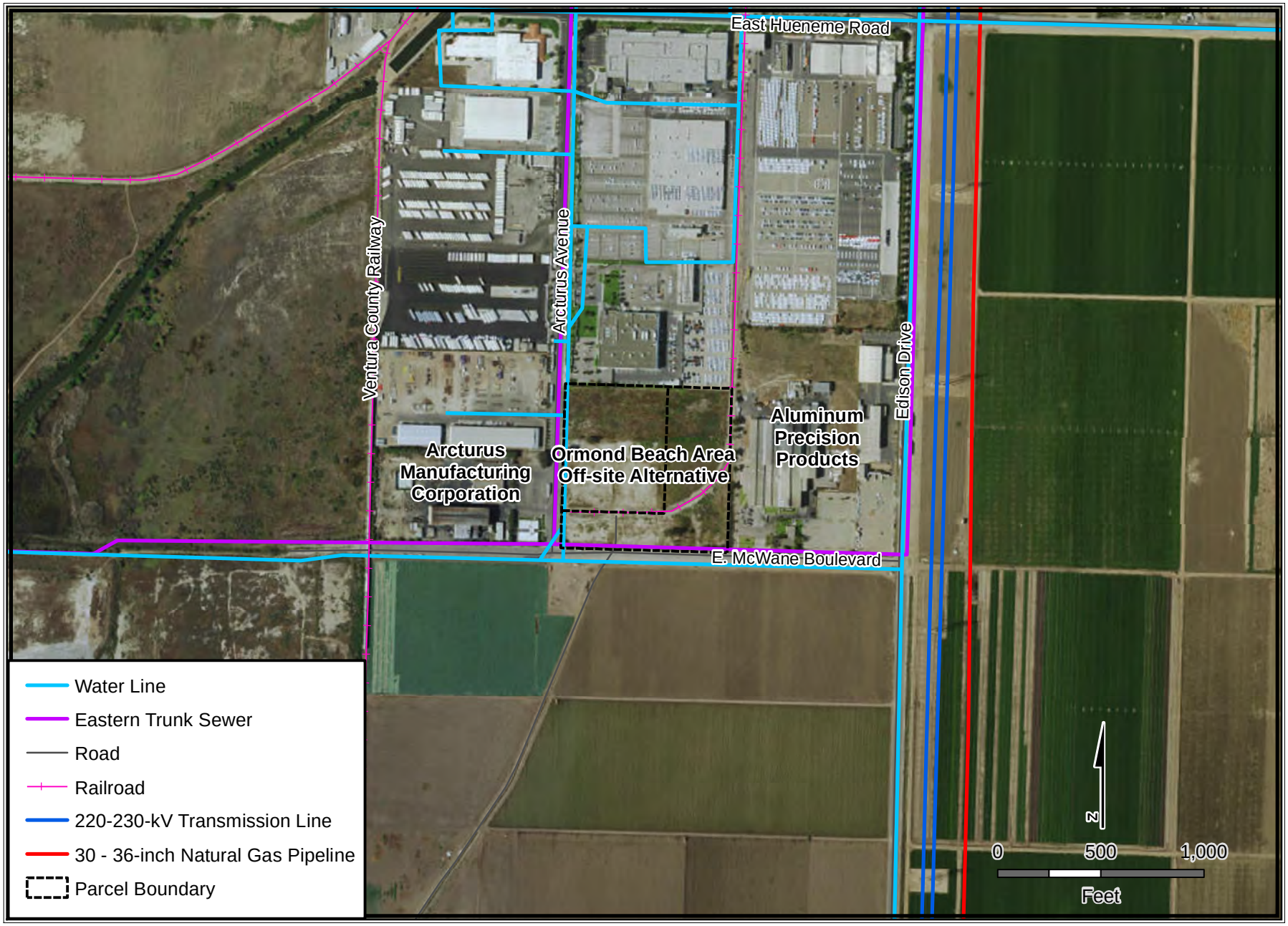


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Energy Commission Staff

ALTERNATIVES - FIGURE 7

Puente Power Project - Ormond Beach Area Off-site Alternative



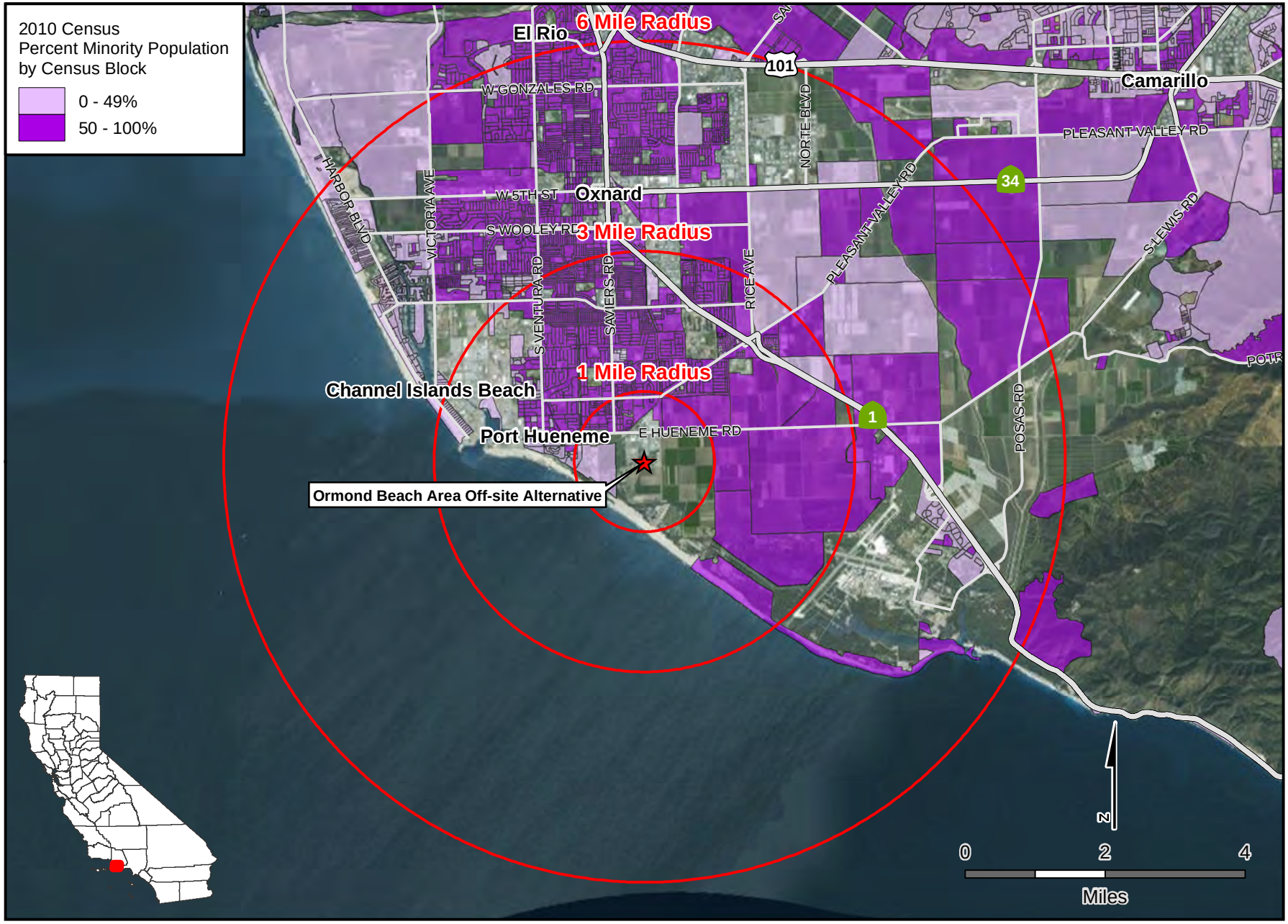
ALTERNATIVES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: ESRI Imagery, California Department of Transportation Data, Ventura County, City of Oxnard Planning & Environmental Services 2006

ALTERNATIVES - FIGURE 8

Puente Power Project - Census 2010 Minority Population by Census Block for the Ormond Beach Area Off-site Alternative



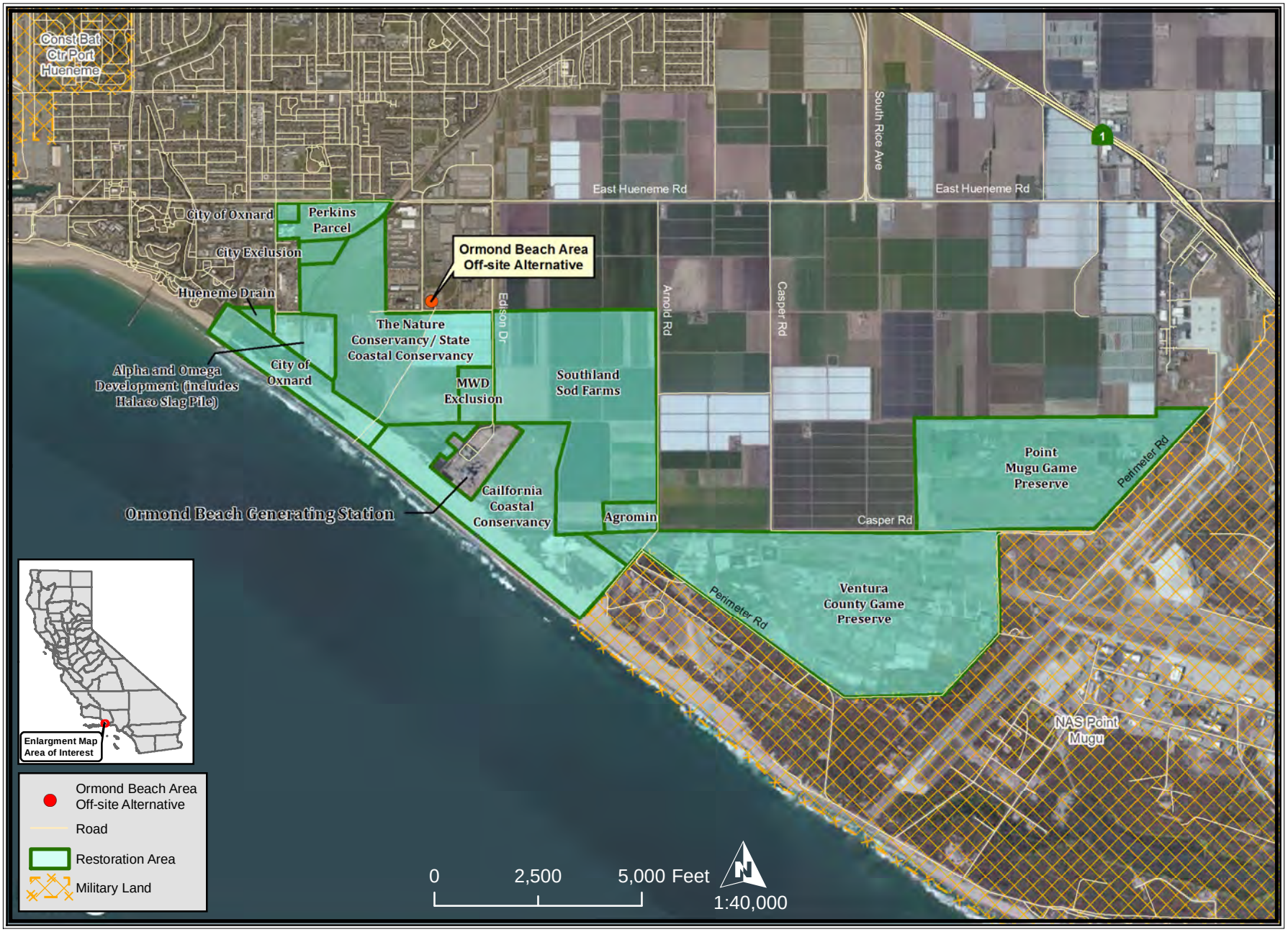
ALTERNATIVES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Census 2010 PL 94-171 Data

ALTERNATIVES - FIGURE 9

Puente Power Project - Ormond Beach Restoration Study Area



CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: WRA Environmental Consultants 2007, Bing Aerial, and ESRI.

ALTERNATIVES - FIGURE 10

Puente Power Project - View Northeast toward the Ormond Beach Area Off-site Alternative from Arcturus Avenue



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Energy Commission Staff

ALTERNATIVES - FIGURE 11

Puente Power Project - View East along E. McWane Boulevard from the Railroad Tracks West of Arcturus Avenue



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Energy Commission Staff

ALTERNATIVES - FIGURE 12

Puente Power Project - View South toward the Ormond Beach Generating Station from Arcturus Avenue



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Energy Commission Staff

ALTERNATIVES - FIGURE 13

Puente Power Project - View Southeast from the Residential Neighborhood at Villa Cesar Chavez



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Energy Commission Staff

ALTERNATIVES - FIGURE 14

Puente Power Project - Conceptual Site Reconfiguration 1

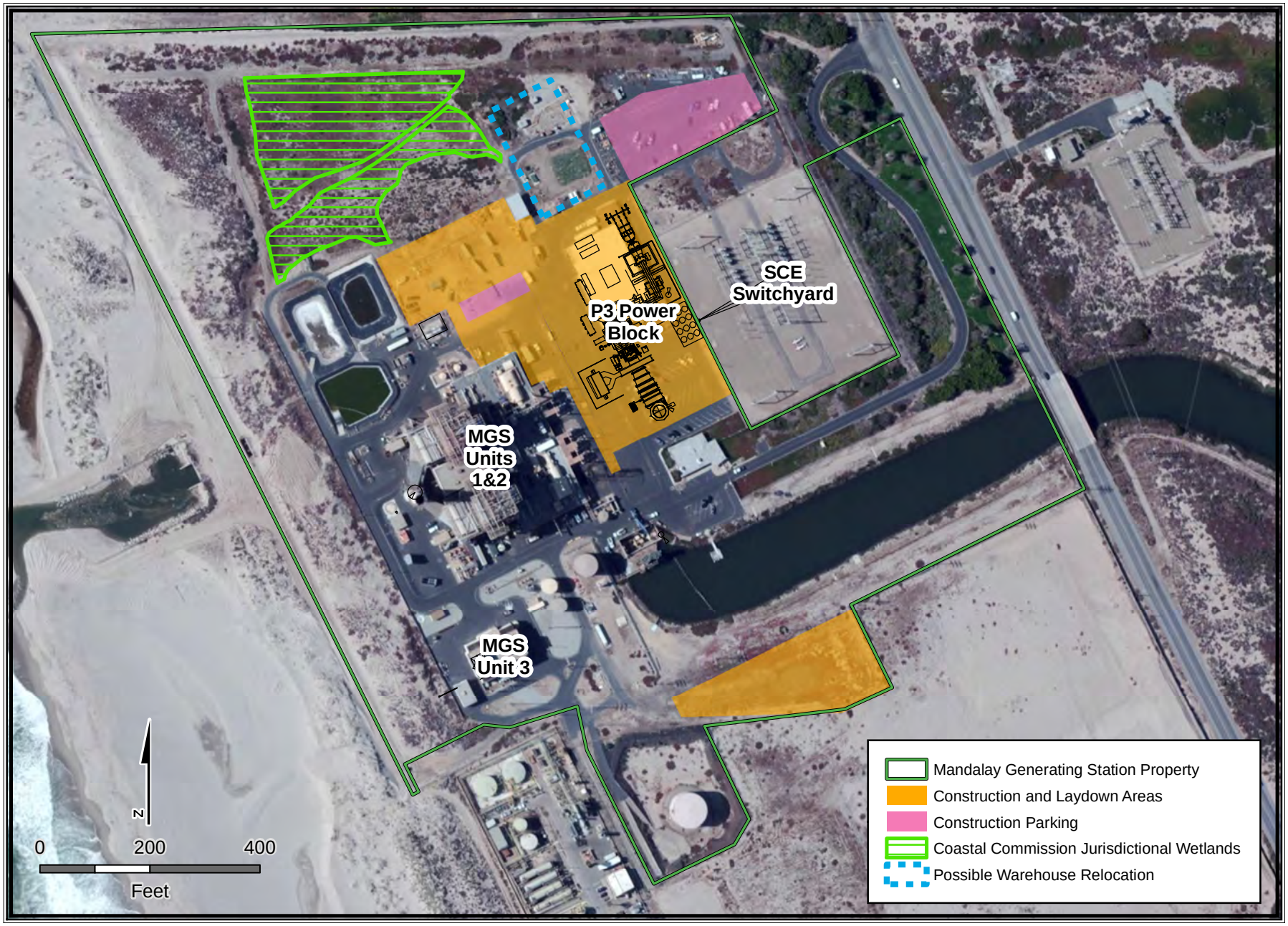


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Adapted from NRG 2015a

ALTERNATIVES - FIGURE 15

Puente Power Project - Conceptual Site Reconfiguration 2



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Adapted from NRG 2015a

BIOLOGICAL RESOURCES

Carol Watson

SUMMARY OF CONCLUSIONS

The proposed Puente Power Project (project or P3) would replace, and be constructed on the site of, the existing Mandalay Generating Station (MGS), an operating power plant in the city of Oxnard, California. Vegetation on-site is largely limited to invasive species such as slenderleaf iceplant; however, one rare plant species, woolly seablite (rare within California), occurs on-site. No special-status wildlife are expected to occur on-site; however, immediately adjacent dune habitat and other natural areas support special-status species including critical habitat for the western snowy plover (federally-listed threatened) and nesting habitat for the California least tern (federally and state-listed endangered). Additionally, the proposed project site supports approximately two acres of wetlands under the jurisdiction of the California Coastal Commission.

Construction, demolition, and operation of the project would result in various effects to biological resources on and near the site. Staff concludes that with implementation of the proposed conditions of certification, direct, indirect, and cumulative impacts would be avoided, minimized, or mitigated to less than significant levels and the project would comply with all applicable laws, ordinances, regulations, and standards (LORS). **Biological Resources Table 7** in the "Conclusions" subsection below contains a summary of the proposed project's impacts, applicable conditions of certification, and determination of significance for each impact area.

INTRODUCTION

The Biological Resources section provides the California Energy Commission (Energy Commission) staff's analysis of potential impacts to biological resources from the construction and operation of the proposed project. 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 (also known as conditions of certification) to reduce impacts to less than significant levels. Additionally, this analysis assesses compliance with applicable LORS.

This analysis is based, in part, on information provided in the P3 Application for Certification (15-AFC-01) (PPP 2015a), Data Adequacy Supplement (PPP 2015b), responses to staff and interveners data requests (PPP 2015c, PPP 2015f, PPP 2015j, PPP 2015m, PPP 2015t, PPP 2015y), staff's observations during site visits of the proposed P3 site on May 18, 2015 and November 19, 2015; and ongoing communications with the responsible agencies: California Department of Fish and Wildlife (CDFW), the California Coastal Commission (Coastal Commission), and the U.S. Fish and Wildlife Service (USFWS).

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 LORS	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.
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 (Corps) 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.
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 LORS	Description
California Coastal Act (Public Resources Code, section 30231)	The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface waterflow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams. The administering agency is the California Coastal Commission.
California Coastal Act (Public Resources Code, section 30233)	The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects. The administering agency is the California Coastal Commission.
Native Plant Protection Act of 1977, Fish and Game Code, §1900 et seq.	The Native Plant Protection Act designates state rare and endangered plants and provides specific protection measures for identified populations. The act also includes a salvage provision, enabling CDFW to collect rare and endangered plants from properties in advance of construction or other activities that would destroy the plants. The administering agency is the CDFW.
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 Oxnard Coastal Land Use Plan policies 6d, 6e; 10a-d, 10g	Encourage preservation and management of biotic resources, including special-status species. The administering agency is the city of Oxnard.
City of Oxnard General Plan §17-20, (A)(3)	Places constraints on sensitive habitat areas, but do not supersede CDFW and USFWS requirements. The administering agency is the City of Oxnard.

SETTING

PROJECT OVERVIEW

The P3 would be built within the boundary of the MGS, an existing power plant and brownfield site. Currently, the MGS consists of three operating generation units; Units 1 and 2, including the 200-foot tall exhaust stack would be decommissioned and demolished following operation of the P3. Unit 3 would continue to operate and draw process water through the Edison Canal.

No new off-site linear facilities are proposed. Natural gas delivery would be via an approximately 500-foot long new pipeline connecting to an existing gas supply pipeline on the site. The P3 would interconnect to the Southern California Edison (SCE) switchyard adjacent to the MGS site via an approximately 735-foot long, 220-kV electric transmission line. The line would be located mostly within the P3 site, crossing a small portion of the MGS site before directly entering the SCE switchyard. Potable process water and domestic water would be provided via an existing water line and connection on the MGS property. Process wastewater would be stored in one of the existing MGS retention basins, and ultimately discharged to the ocean via the existing outfall. Storm water would be directed to one of the existing MGS retention basins, where the water

would be reused on-site for industrial purposes (i.e., evaporative cooling for the P3 unit), and/or irrigation purposes to the extent feasible and practical. Surplus storm water would be discharged to the ocean via the existing outfall. Sanitary wastewater would continue to be discharged to the existing MGS septic system.

Approximately 4.7 acres of the MGS site would be used for construction laydown, parking, and an office building. Approximately 0.9 acre of the 5.7 acres is currently paved. The remaining unpaved areas to be used for construction laydown and parking areas would be graded (as necessary), and surfaced with 4 inches of crushed rock. A construction laydown area would be established approximately 100 feet south of the Edison Canal, in the southern portion of the MGS site. The vegetation in the overflow area exhibits signs of chronic disturbance, and is likely mowed on a periodic basis. Vegetation in this area was mapped as ruderal; and no special-status plants or wildlife are expected to occur here.

REGIONAL SETTING

The P3 would be sited on approximately 3 acres of the northern portion of the existing 36-acre MGS property in Ventura County. The existing MGS facility is in an industrial area that includes oil drilling and processing operations, as well as SCE-owned power-generating and transmission facilities.

The primary land uses and habitat types within the area consist of agriculture, industry, and remnant native vegetation. An extensive beach-dune complex runs along Oxnard Coast. The entire region has been subject to significant human modifications, primarily intended to drain lowlands for agriculture, and other uses such as oil production. Combined with upstream dam installation, sediment yields have dropped and coastal erosion is now a significant issue in some parts of the region (see the **Soil & Water Resources** section of this Preliminary Staff Assessment (PSA). Extensive urban development throughout the region has replaced most of the natural open space. Natural habitats are now restricted to scattered open space preserves and other protected areas.

Wetlands within the area historically were part of a salt marsh and brackish water lagoon and dune system. These lagoons were located behind a narrow sandy barrier beach of low dunes and were fed by water from creeks, surface flow over the plain, and inundated by salt water during high tides or storms. Periodically, the barrier beach was breached by discharge of meandering river flows or the action of winter storm waves. Some of the lagoons likely remained open to the ocean for a period after the breaching event. Tidal connections have likely always been muted by a beach sill. Some high-salinity (hyperhaline) wetlands may have formed naturally, in lowland areas where occasional tidal flushing occurs.

The site receives most of its water as runoff from inland sources and from adjacent high water table at McGrath Lake. Historically, the Santa Clara River floodplain flow path to the ocean meandered back and forth, depositing alluvium and leaving small freshwater lakes such as McGrath Lake, and sometimes leaving brackish lagoons at old locations. A brackish dune of such origin exists at Seaside Park. Some of these remain closed lagoons. The Santa Clara River mouth is approximately two miles north of the project.

The project site is at the seaward edge of the broad Santa Clara River alluvial plain in the city of Oxnard, adjacent to Mandalay State Beach. The site is bordered by sandy beach, sand dunes, and the Pacific Ocean to the west, McGrath Lake State Park and land owned by SunCal to the north, industrial uses to the north, south, and east, and agricultural uses farther to the east. The site is approximately 2 miles south of the Santa Clara River mouth, and approximately 12 miles northwest of Mugu Lagoon. McGrath State Beach (which includes McGrath Lake) is approximately 450 feet from the site's northern boundary.

Historically, the shoreline between the mouth of the Santa Clara River and Mugu Lagoon consisted of sandy beaches, freshwater marshes, McGrath Lake, sand dunes, and an extensive series of mostly closed brackish to saline lagoons, seasonal ponds, salt flats, and salt/brackish marshes (Beller et al., 2011), please see **Biological Resources Figure 1, Regional Vegetation Map**. The extent of the system has been significantly reduced, but remnants of these habitats remain. Below is a more in-depth summary of each of these nearby habitat types; excerpted from the AFC (PPP 2015a) and verified by staff.

Sandy Beach

The P3 site is situated in close proximity to the Pacific Ocean, and abuts a long, sandy beach and dune system. The beach adjacent to the P3 site varies in width, but is generally greater than 300 feet wide. Hummocks of sand dunes separate the beach from the inland flat areas that are in cultivated agriculture or are developed. The dunes vary in height, with the highest being about 30 feet above mean sea level. The inland flats between the dunes and Harbor Boulevard are about 10 to 16 feet above mean sea level (California Department of Parks and Recreation, 1979). The beaches in the area support colonies of nesting California least tern (*Sterna antillarum browni*) (federally-endangered; state-threatened) and western snowy plover (*Charadrius nivosus nivosus*) (federally-threatened and a California Species of Special Concern).

McGrath Lake

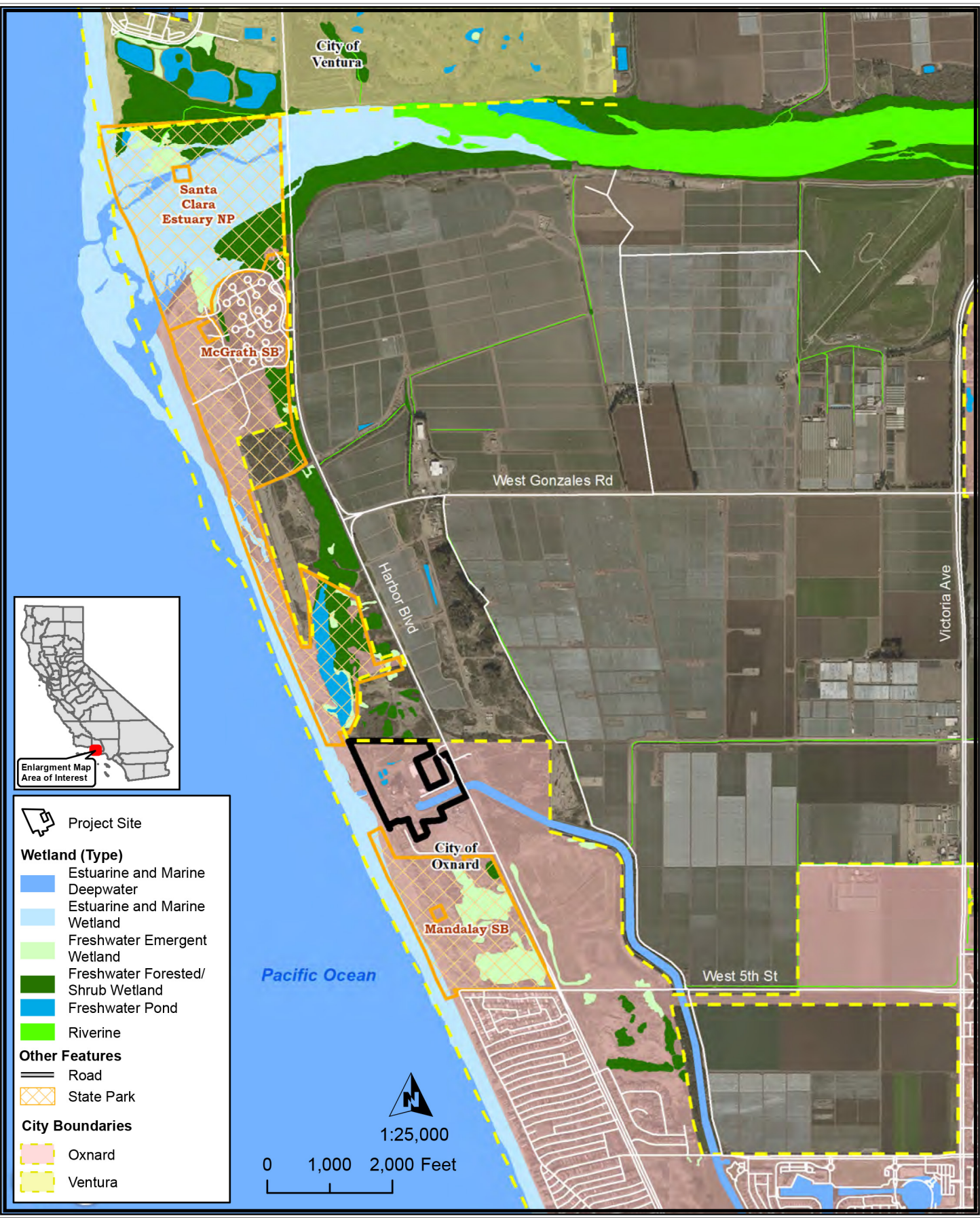
McGrath Lake is a natural freshwater lake that occurs in a low spot between parallel ridges of sand dunes north of the P3 site. Currently, the southwestern tip of McGrath Lake is approximately 450 feet from the northwestern corner of the site. Tile drains were installed in the region to facilitate the development of farms, which greatly reduced the extent of flooded soils, and consequently, wetlands. In 1958, Harbor Boulevard was built east of the park and lake, further disrupting the hydrological inputs to McGrath Lake. Under current conditions, the lake receives water from tile drain discharge, irrigation runoff, and storm water from agricultural operations in the sub-watershed. An artificial discharge of lake water to McGrath State Beach occurs through the use of pumps to minimize flooding the fields east of Harbor Boulevard (California State Water Resources Control Board, 2010).

Sand Dunes

A topographic map of dunes near McGrath Lake drawn in 1855 indicates dune tussocks and alkaline grassland (probably populated by saltgrass) in the depressions, and willows on the higher portions of the dunes. Researchers have deduced that in the early

BIOLOGICAL RESOURCES - FIGURE 1

Puente Power Project PSA - Regional Vegetation



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: United States Fish and Wildlife Service ~ 2015, OpenStreetMap, Bing Aerial and ESRI.

1800s, the project site itself was sand dunes, with scattered alkali meadows in the low spots between the dunes (Beller et al., 2011). Plants recorded on the dunes near Mandalay Beach in the 1930s include yellow bush lupine (*Lupinus arboreus*) and pink and red sand verbena *(Abronia umbellata* and *A. maritima*), among many others (Beller et al., 2011). The dunes currently support special-status animals, including globose dune beetle (*Coelus globosus*) and silvery legless lizard (*Anniella* sp.)

Saltwater Marsh

Saltwater marsh, vegetated by pickleweed, jaumea, and saltgrass, is present between the campground at McGrath State Beach and the river mouth. Drainage of the marsh is controlled by a flood gate at the intersection of the levee and the dunes (California Department of Parks and Recreation, 1979). The marsh supports Ventura marsh milk-vetch (*Astragalus pycnostachyus* var*. lanosissimus*), saltmarsh bird's-beak (*Chloropyron maritimum*), black rail (*Laterallus jamaicensis*), and Belding's savannah sparrow (*Passerculus sandwichensis beldingi*).

Lagoons

An extensive series of lagoons between the Santa Clara River mouth and Mugu Lagoon was mapped in the 1850s. These maps depict the lagoons as a series of open water/salt flat/marsh complexes separated from the ocean by tall and wide sand dunes. None of the lagoons are shown with a tidal outlet. They probably opened infrequently, and would today be considered perched or dune-dammed lagoons. Some of them supported Ventura marsh milk-vetch and saltmarsh bird's-beak (Beller et al., 2011).

Environmentally Sensitive Habitat

Sensitive habitat in the vicinity (1-mile radius) of the project site include: Coastal and Valley Freshwater Marsh, Southern California Coastal Lagoon, Southern Coast Live Oak Riparian Forest, Southern Coastal Salt Marsh, and Southern Riparian Scrub (CDFW, 2015). These habitat types do not occur on the site. Coastal and Valley Freshwater Marsh is mapped within 500 feet of the project site (AFC, Figure 4.2-3, PPP 2015a); and Southern Coastal Salt Marsh has been mapped within 1.5 miles of the site. The project would not require any work in these habitats.

Critical Habitat

Critical habitat is a formal designation under the Endangered Species Act. It is a specific geographic area that contains features essential for the conservation of a federally-threatened or endangered species and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but is needed for its recovery. Critical habitat for the following four federally-listed species is located in the regional vicinity of the proposed P3. See **Biological Resources Figure 2, USFWS Critical Habitat**.

Ventura Marsh Milk-Vetch (*Astragalus pycnostachyus var. lanosissimus*)

Critical habitat for the Ventura marsh milk-vetch has been documented in four places near the project site: 1) the Santa Clara River mouth; 2) McGrath State Beach; 3) in Oxnard at the northeastern corner of West 5th Street and Harbor Blvd, 90 meters north

of 5th Street; and 4) in Oxnard 150 meters northeast of the intersection of West 5th Street and Harbor Boulevard (CCH, 2015). This species was not observed on the project site during botanical surveys.

Tidewater Goby (Eucyclogobius newberryi)
Critical habitat for the tidewater goby has been documented in the Santa Clara River estuary and the Oxnard Drain ("J Street Canal"), the Ormond Beach area, and southeast of Port Hueneme (CDFW, 2015a). This species could occur in Edison Canal.

Western Snowy Plover (*Charadrius nivosus nivosus*)
Critical habitat for the western snowy plover is designated on the beaches and dunes west, northwest, and southwest of the project site (USFWS, 2012; and PPP 2015a, Figure 4.2-3; **Biological Resources Figure 2**). The beaches and sand dunes within Mandalay State Beach and McGrath State Beach in the immediate vicinity of the project site support both wintering populations and breeding populations of this species (California State Parks, 2013). There is no suitable habitat for the species on the project site. However, the northwest corner of the project site is approximately 500 feet from the closest potential nesting area.

Southwestern Willow Flycatcher (*Empidonax traillii extimus*)
Critical habitat for the southwestern willow flycatcher occurs in the riparian zone and associated marshes for the length of the Santa Clara River that is within the 10-mile buffer of the project site, as well as McGrath Lake. There is no suitable habitat for the species on the immediate project site.

PROJECT SITE AND VICINITY DESCRIPTION

The applicant used a combination of aerial photography, a literature review, and available databases to identify habitat that could support special-status plants or animals. In addition to a literature review, biological surveys were performed January 12, 2015, and botanical and wildlife surveys of the site and surrounding vicinity were conducted on March 12 and 31, 2015. Staff has reviewed and verified this information, and additionally, has performed an independent literature review, and evaluated and verified the credentials of the applicant's consultants that performed supporting biological survey efforts and reporting (PPP 2015a, Volume II, Appendix D).

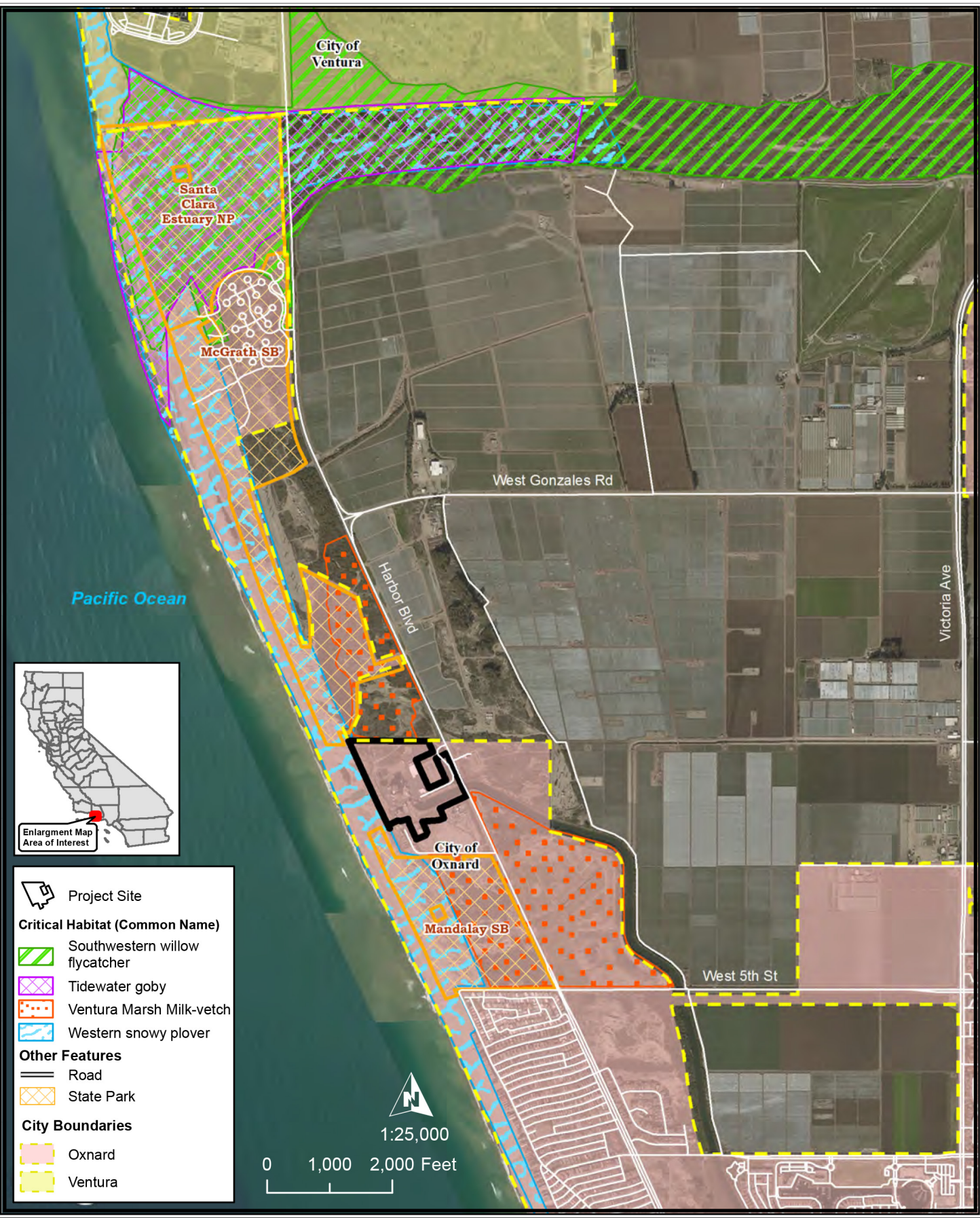
Staff visited the site on March 18, 2015 and November 19, 2015 to review onsite features and confirm the findings of the applicant's biological report (AFC, Volumes 1 and 2; PPP 2015a). The following description of existing biological resources presents the results of staff and project owner's project-site specific investigations.

Vegetation/Land Cover Types

The proposed P3 site and laydown area are industrial. The majority of the project area is paved. The site itself has been graded and subjected to various human uses in the past, and the vegetation is significantly disturbed. Vegetation on the site was historically kept to a minimum, and at times the site was almost completely covered with stockpiles of soil.

BIOLOGICAL RESOURCES - FIGURE 2

Puente Power Project PSA - USFWS Critical Habitat



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: United States Fish and Wildlife Service ~ 2015, OpenStreetMap, Bing Aerial and ESRI.

Vegetation within 1,000 feet of the P3 site and laydown areas includes a variety of natural and anthropogenic vegetation communities. See **Biological Resources Figure 3, Vicinity Vegetation Map**. Some areas are unvegetated, either naturally or due to land use practices; these include open water at McGrath Lake and the Pacific Ocean, the sandy beaches, and developed hardscape. Vegetation communities and land covers observed within 1,000 feet of the proposed site are as follows (excerpted from the AFC [PPP 2015a] and verified by staff):

Agricultural

In the vicinity of the P3 site, agricultural lands occur on the east side of Harbor Boulevard, north of the site. This habitat supports a variety of common plants and wildlife, and may support foraging birds and raptors.

Arroyo Willow Thickets (*Salix lasiolepis*)

Arroyo willow thickets occur on stream banks, benches, seeps, and along drainages (Sawyer et al., 2009), and are identified by the CDFW (2010) as a sensitive natural community. This community occurs north of the project site, in association with the McGrath Lake ecosystem and localized topographic depressions (ESA, 2003).

California Bulrush Marsh (*Schoenoplectus californicus*)

In the vicinity of the P3 site, California bulrush marsh occurs on the margins of McGrath Lake, between the open water habitats and the surrounding scrub habitats. California bulrush marsh maintains no sensitivity designation, but is generally regarded as a riparian community and afforded consideration in environmental analyses under the California Environmental Quality Act (CEQA).

California Sagebrush Scrub (*Artemisia californica*)

Within 1,000 feet of the project site, this community occurs only adjacent to the McGrath Peaker Plant as a strip of native landscaping that has been planted along Harbor Boulevard.

Developed

In the vicinity of the P3 site, developed areas include the existing MGS facility, the adjacent McGrath Peaker Plant, Harbor Boulevard, and other smaller structures and areas of hardscape.

Dune Mats (*Abronia latifolia-Ambrosia chamissonis*)

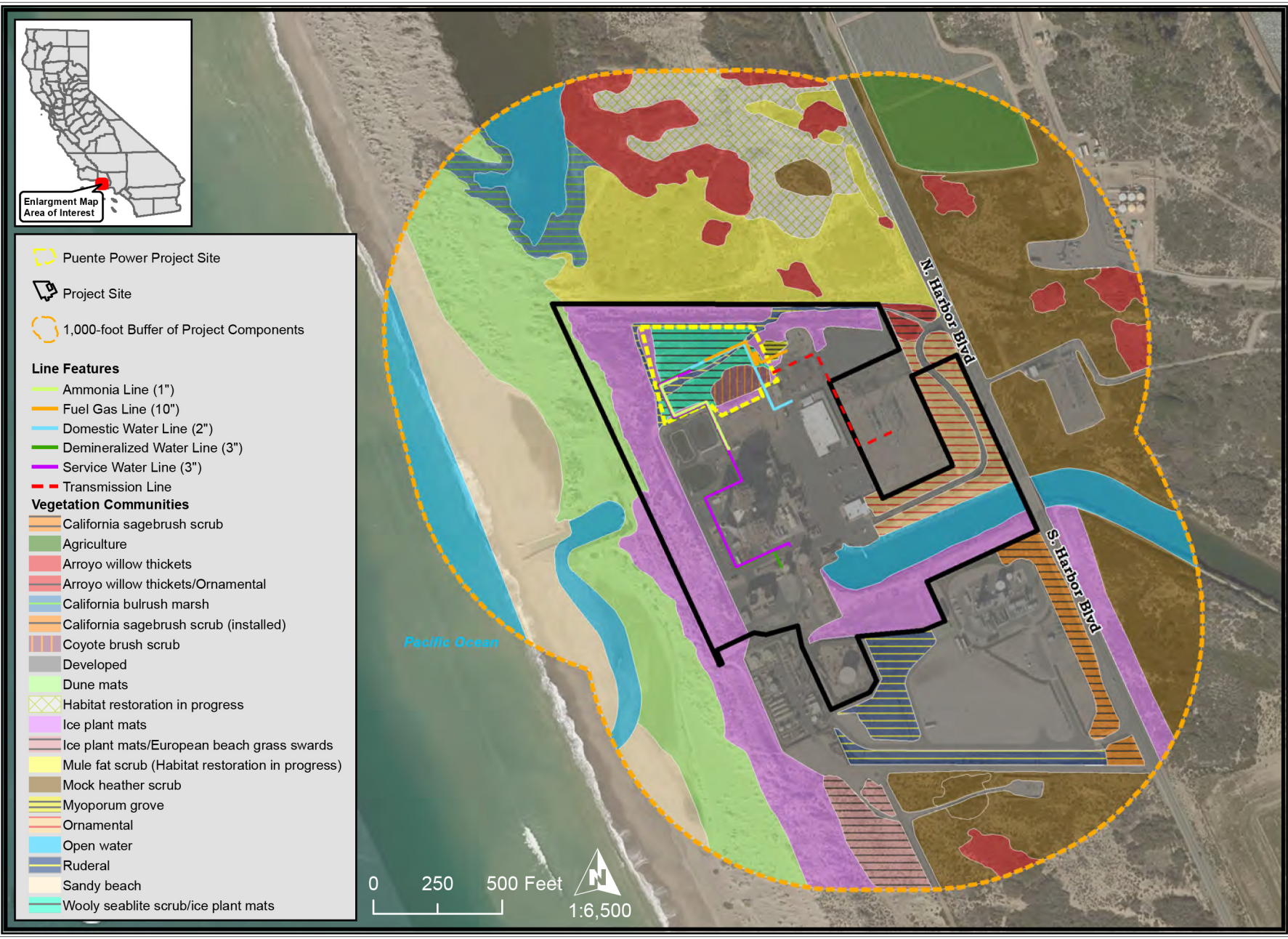
This community occurs west and north of the project site (ESA, 2003). Dune mats are identified by the CDFW (2010) as a sensitive natural community, and are located on dune systems.

Ice Plant Mats (*Carpobrotus edulis*)

The P3 site is dominated by nonnative iceplant mats, and this community also occurs on the adjacent state beach property to the north (ESA, 2003) and much of the surrounding land. In some portions of the P3 site, woolly seablite (*Suaeda taxifolia*) occurs as a dominant species, along with the iceplant species described above.

BIOLOGICAL RESOURCES - FIGURE 3

Puente Power Project PSA - Vicinity Vegetation



CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Puente Power Project (P3) 15-AFC-01, Figure 2.7-8 and Figure 4.2-2, Bing Aerial, and ESRI.

Similarly, one area south of the MGS facility contains ice plant mats co-dominated by nonnative Mediterranean grasses.

Mock Heather Scrub (*Ericameria ericoides*)

Mock heather scrub was mapped in three areas near the P3 site, including one area to the north, one area to the east, and one area to the south

Mule Fat Thickets (*Baccharis salicifolia*)

Mule fat thickets occur adjacent to the northern perimeter of the MGS site, in association with the McGrath Lake ecosystem. During field surveys conducted in March 2015, habitat restoration efforts were observed to be underway in this area. This wetland community has no sensitivity designation, but is generally regarded as a riparian community and afforded consideration in environmental analysis pursuant to CEQA.

Myoporum Grove (*Myoporum laetum*)

In the vicinity of the P3 site, only one myoporum grove was mapped; the area occurs immediately adjacent to the eastern site boundary. Although nonnative, myoporum groves may provide suitable habitat for nesting birds.

Ornamental

In the vicinity of the P3 site, ornamental vegetation is present along both sides of the entry drive to the MGS facility. This vegetation likely provides limited habitat for wildlife, and is unlikely to support rare plant species.

Ruderal

In the vicinity of the P3 site, ruderal vegetation occurs south of Edison Canal, including throughout the proposed laydown area. Undeveloped portions of the adjacent SCE McGrath Peaker Plant site also exhibit ruderal vegetation.

Sandy Beach

Despite the absence of vegetation, sandy beaches can provide valuable habitat features for some species, such as western snowy plover and California least tern.

Wetlands and Other Jurisdictional Waters

Waters of the United States

The U.S. Army Corps of Engineers (Corps) regulates “Waters of the United States” under Section 404 of the Clean Water Act. “Waters of the U.S.” are defined broadly as waters susceptible to use in commerce, including interstate waters and wetlands, all other waters (intrastate waterbodies, including wetlands), and their tributaries (33 CFR 328.3). Potential wetland areas, according to the three criteria used to delineate wetlands stated in the Corps of Engineers Wetlands Delineation Manual (1987), are identified by the presence of (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. Areas that are inundated for sufficient duration and depth to exclude growth of hydrophytic vegetation are subject to Section 404 jurisdiction as “other waters” and

are often characterized by an ordinary high water line. Other waters, for example, generally include lakes, rivers, and streams. The placement of fill material into “Waters of the U.S.” (including wetlands) generally requires an individual or nationwide permit from the Corps under Section 404 of the Clean Water Act. There are no waters of the U.S. on the project site.

Waters of the State

“Waters of the State” are defined by the Porter-Cologne Act as “any surface water or groundwater, including saline waters, within the boundaries of the state.” The Regional Water Quality Control Board (RWQCB) protects all waters in its regulatory scope, but has special responsibility for wetlands, riparian areas, and headwaters. These waterbodies have high resource value, are vulnerable to filling, and are not systematically protected by other programs. RWQCB jurisdiction includes “isolated” wetlands and waters that may not be regulated by the Corps under Section 404. “Waters of the State” are regulated by the RWQCB under the State Water Quality Certification Program which regulates discharges of fill and dredged material under Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act.

Projects that require a Corps permit, or fall under other federal jurisdiction, and have the potential to impact “Waters of the State,” are required to comply with the terms of the Water Quality Certification determination. If a proposed project does not require a federal permit, but does involve dredge or fill activities that may result in a discharge to “Waters of the State,” the RWQCB has the option to regulate the dredge and fill activities under its state authority in the form of Waste Discharge Requirements or Certification of Waste Discharge Requirements. Waters of the state are also regulated by the CDFW, pursuant to Section 1600 of California Department of Fish and Game Code. The Fish and Game Code regulates activities that could divert, obstruct, or change the natural flow or the bed, bank, or channel of any river, stream, or lake. There are no waters of the state on the project site.

Coastal Zone Wetlands

Rather than utilizing a three-parameter approach (presence of hydrophytic vegetation, wetland hydrology, and hydric soils) used at the federal level by the Corps, the Coastal Act defines “wetlands” more broadly. This definition is generally referred to as the "one parameter approach,” which requires the presence of only one wetland indicator, i.e. plants, hydrology, or soils. The Coastal Act defines wetlands as:

> *"Wetland means lands within the Coastal Zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens.* (Pub. Resources Code § 30121)

The California Coastal Commission has also adopted the following definition of a wetland:

> *Wetlands are lands where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is*

lacking and soil is poorly developed or absent as a result of frequent or drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salt or other substance in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deepwater habitats.

The project site has been actively maintained to facilitate operation of existing power generation and has experienced varied uses such as a marine dredging spoils storage; and therefore does not support wetlands or other waters under the jurisdiction of the Corps or CDFW. The applicant delineated an area within the site and found that it potentially could be considered to contain hydrophytic vegetation, one of the three parameters for classification as a wetland under Coastal Commission regulations. Pickleweed, woolly seablite, and slenderleaf ice plant were each found on-site, are each considered hydrophytic plants, and are listed on the Corps' wetland plant list (Lichvar et al 2014). The applicant's consultant has mapped the location of approximately 1,000 occurrences of woolly seablite scattered randomly across the entire proposed 3-acre project site.

Historical soil surveys of the area establish the fact that the area has never supported a wetland, nor provided the form or functions of a wetland. The November 1969 U.S. Department of Agriculture soils map shows the greater coastal zone along the county as historically consisting of Riverwash-Sandy alluvial land-coastal beaches association, with excessively drained to poorly drained soils of alluvial fans, plains, and basins. Soils specifically mapped onsite are Coastal Beaches (CnB), with soils consisting of aeolian deposits derived from beach sand, and soils immediately adjacent to the site are alsCnB along with Hueneme sandy loam (Hn); derived from sedimentary rock, and are both poorly drained soils (PPP 2015a, Figure 4.11-1). In contrast, hydric soils are typically flooded or inundated for a long duration during the growing season, or have water tables no more than 1.5 feet from the surface (Wetland Training Institute 1989). Depth to groundwater at the P3 site is five to nine feet (PPP 2015a: page 4.15-3). The Natural Resources Conservation Service (NRCS) states that native vegetation associated with this soil type are salt-tolerant forbs and grasses (NRCS 2015). Remnant plants of historic southern dune vegetation have been documented on the site (PPP 2015a), in the general vicinity at Mandalay State Beach (CCC 2007a), and east of Harbor Boulevard adjacent to the project (CCC 2007b). Further, the entire Oxnard coast was a complex of narrow, sandy, barrier beaches and low dunes interspersed with lagoons, marshes, and flats (Griggs et al 2005). It is this low beach dune barrier system that allows the freshwater McGrath Lake to sit on the beach, on a confined aquifer system (Griggs et al 2015).

Plants are given terms to describe the percentage of time that they occur in wetlands (Lichvar et al 2014), and only one of the three hydrophytic plants, pickleweed, is nearly always restricted to wetlands. Slenderleaf iceplant and woolly seablight may grow on upland soils as well, see **Biological Resources Table 2**. The applicant's wetland delineation (PPP 2015a: Appendix D, Wetland Determination Data Forms) also documented upland plants, such as coyote brush, within the same area. No other wetland indicators, such as hydric soils or wetland hydrology were documented during the applicant's wetland delineation.

Biological Resources Table 2
Wetland Indicator Status

Indicator Code	Indicator Status	Designation	Comment	Representative On-site Plant
OBL	Obligate Wetland	Hydrophyte	Almost always occur in wetlands	Pickleweed
FACW	Facultative Wetland	Hydrophyte	Usually occur in wetlands, but may occur in non-wetlands	Woolly seablite
FAC	Facultative	Hydrophyte	Occur in wetlands and non-wetlands	Slenderleaf iceplant
FACU	Facultative upland	Nonhydrophyte	Usually occur in non-wetlands, but may occur in wetlands	Russian thistle
UPL	Obligate upland	Nonhydrophyte	Almost never occur in wetlands	Coyote brush

Staff reviewed and confirmed the presence of woolly seablite, other on-site vegetation, and general condition of the proposed project site and immediately adjacent environs during a May 19, 2015 site visit. On November 19, staff met the Coastal Commission biologist on-site to survey potential wetlands and evaluate the project site according to Coastal Commission regulations. The Coastal Commission will prepare a staff report containing final analysis and jurisdictional determination, and Energy Commission staff will review the report, when available. However, based on Energy Commission staff's site visits, subsequent research, and preliminary feedback from Coastal Commission staff on November 19, 2015, Energy Commission staff currently recommends that approximately 2.03 acres of the project site should be classified as a wetland pursuant to Coastal Commission regulations.

Wildlife

The majority of the MGS site is composed of impervious surfaces (i.e., buildings, tanks, and paved lots/roads) that have little to no wildlife value. In combination with the frequency and intensity of disturbance from operation of the MGS, the proposed P3 site does not provide important habitat for native wildlife. Species observed within the proposed project site include California ground squirrel (*Otospermophilus beecheyi*), house finch (*Carpodacus mexicanus*), house sparrow (*Passerculus domesticus*), and western fence lizard (*Sceloporus occidentalis*). Other birds protected under the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code, but without other special-status listing, such as killdeer (*Charadrius vociferous*), doves (*Zenaida sp*.), and sparrows (*Passerculus* sp.) may nest in open areas and in unused structures on the MGS site; ruderal areas on the site may provide limited foraging and nesting habitat for these species.

The adjacent offsite McGrath Lake and adjacent wetlands provide habitat for a greater diversity of common wildlife species. Species observed in this habitat include American crow (*Corvus brachyrhynchos*), barn swallow (*Hirundo rustica*), common 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, rock pigeon (*Columba livia*), snowy egret (*Egretta thula*), and turkey vulture (*Cathartes aura*).

The open water of Edison Canal may provide habitat for common coastal saltwater fishes, and may also support sensitive species such as the tidewater goby (*Eucyclogobius newberryi*). Freshwater aquatic species such as the western pond turtle (*Actinemys marmorata*) are not expected to occur in the canal due to elevated salinity levels. The Edison Canal may also provide foraging habitat for sensitive birds such as California least tern and a variety of water fowl, including mallards (*Anas platyrhynchos*) and American coot (*Fulica americana*). No aquatic habitat occurs in the project site or proposed laydown areas, and aquatic species are not expected to occupy these areas.

The site is a former dune location that is currently dominated by iceplant and other non-native vegetation. Wildlife species that could be present include western toad (*Bufo boreas*), Baja California treefrog (*Pseudacris ypochondriaca hypochondriaca*), Blainville's horned lizard (*Phrynosoma blainvillii*), terrestrial gopher snake (*Pituophis catenifer*), common garter snake (*Thamnophis sirtalis*), western rattlesnake (*Crotalus viridis*), western fence lizard (*Sceloporus occidentalis*), side-blotched lizard *(Uta stansburiana*), mourning dove (*Zenaida macroura*), house finch (*Carpodacus mexicanus*), song sparrow (*Melospiza melodia*), white-crowned sparrow (*Zonotrichia leucophrys*) and western scrub jay (*Aphelocoma californica*), among others. Large and medium-sized mammals are not expected to occur on site, due to the existing facility fencing.

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;

- 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 CEQA.

Biological Resources Table 3 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. The majority of the species would not be likely to occur on the P3 site.

Biological Resources Table 3
Special-status Species Known to Occur or Potentially Occurring in the Project Area

Common Name (*Scientific Name*)	**Status Fed/State/CRPR/ G-Rank/S-Rank**	**Potential for Occurrence in Project Impact Area***
PLANTS		
Ventura Marsh Milk-Vetch (*Astragalus pycnostachyus* var. *lanosissimus*)	**__/__/1B.1/G2T1 /S1**	**Low.** The iceplant and coyote brush on the P3 site are not suitable habitats for the species. Species was not observed during botanical surveys. Nearest documented occurrences were across the road from McGrath State Beach, the mouth of the Santa Clara River, northeast of the intersection of Harbor Boulevard and West 5th Street near McGrath State Beach, and Mandalay Beach.
Coulter's Saltbush (*Atriplex coulteri*)	**__/__/1B.2/G2/S 2**	**Low.** The remnant dunes on the site are marginally suitable habitat, but species was not detected during botanical surveys. The nearest documented occurrence was on a Coastal Bluff 1.5 miles west of the Ventura River.
South Coast Saltscale (*Atriplex pacifica*)	**__/__/1B.2/G3G4 /S2**	**Moderate.** The remnant dunes on the site are marginally suitable habitat, but species was not detected during botanical surveys. The nearest documented occurrence was 1.5 miles west of the Ventura River.
Davidson's Saltscale (*Atriplex serenana* var. *davidsonii*)	**__/__/1B.2/G5T1 /S1**	**Moderate.** This species might occur along the road edges and in other unvegetated parts of the site. Species was not detected during botanical surveys. The nearest documented occurrence was on the roadside of Ventura Boulevard north of Highway 101.
Salt Marsh Bird's Beak (*Chloropyron maritimum*)	**FE/SE/1B.2/G4T 1/S1**	**Low.** This species occurs in natural wetlands and alkali flats. Species was not detected during botanical surveys. The nearest documented occurrences were near the mouth of the Santa Clara River, near McGrath State Beach, and Ormond Beach alkali flats.
Mexican Malacothrix (*Malacothrix similis*)	**__/__/2A/G2G3/ SH**	**Low.** Suitable habitat is not present on the site. Species was not detected during botanical surveys. The nearest documented occurrence was in the vicinity of Port Hueneme Beach Park in 1925. Likely extirpated.
Woolly Seablite (*Suaeda taxifolia*)	**__/__/4.2/G/S4**	**High.** Species was detected on-site during botanical surveys.
Red (Sticky) Sand Verbena (*Abronia maritima*)	**__/__/4.2/G4/S2 S4**	**Low.** The only marginally suitable habitat on-site is the loose sand along the edge of the road near the

Common Name (*Scientific Name*)	Status Fed/State/CRPR/ G-Rank/S-Rank	Potential for Occurrence in Project Impact Area*
		northern perimeter of the site, but species was not detected during floristic surveys. The nearest documented occurrences are at Mandalay Beach and McGrath State Beach.
Dunedelion (*Malacothrix incana*)	**__/__/4.3/G4/S4**	**High.** The species might occur in dunes adjacent to the site, but was not observed during site botanical surveys. The nearest documented occurrence was in the project vicinity.
Aphanisma (*Aphanisma blitoides*)	**__/__/1B.2/G3G4 /S2**	**Low.** Suitable habitat was not present on the site. Species was not detected during botanical surveys.
Coulter's Goldfields (*Lasthenia glabrata ssp. Coulteri*)	**__/__/1B.1/G4T2 /S2**	**Low.** Suitable habitat was not present on the site. Species was not detected during botanical surveys.
Estuary Seablite (*Suaeda esteroa*)	**__/__/1B.2/G3/S 2**	**Low.** Suitable habitat was not present on the site. Species was not detected during botanical surveys.
WILDLIFE		
Sandy Beach Tiger Beetle (*Cicindela hirticollis gravida*)	**__/__/__/G5T2/S 1**	**Low.** Suitable habitat is not present on the site. The nearest documented occurrence was McGrath State Beach just south of the mouth of the Santa Clara River.
Globose Dune Beetle (*Coelus globosus*)	**__/__/__/G1G2/S 1S2**	**Moderate.** The remnant dunes on the site might support this species. The nearest documented occurrences were near Point Mugu Naval Air Station, Ventura, Hueneme, and Ormond Beach.
Tidewater Goby (*Eucyclogobius newberryi*)	**FE/__/__/G3/S3**	**Low.** Suitable aquatic habitat is not present on the site. The nearest documented occurrences are Santa Clara River estuary, Oxnard drain (J Street canal), Ormond Beach Area, and southeast of Port Hueneme.
Western Pond Turtle (*Actinemys marmorata*)	**__/__/__/G3G4/S 3**	**Moderate.** Suitable habitat is not present on the site. The nearest documented occurrence is the Santa Clara River Estuary.
Silvery Legless Lizard (*Anniella pulchra* or A. *stebbinsii*)	**__/__/__/G3G4T 3T4Q/S3**	**Moderate.** Sparsely vegetated sandy soils could support this species. Most of the site is not suitable habitat. Species was not detected during wildlife surveys. The nearest documented occurrences were north of the MGS and east of McGrath Lake.
Coastal Whiptail (*Aspidoscelis tigris stejnegeri)*	**__/__/__/G5T3T4 /S2S3**	**Low.** Could occur in the coyote brush scrub.
Blainville's Horned Lizard (*Phrynosoma blainvillii*)	**__/__/__/G3G4/S 3S4**	**Moderate.** Sparsely vegetated sandy soils could support this species. Most of the site is not suitable habitat. Species was not detected during wildlife surveys. The nearest documented occurrences were south of the Santa Clara River and southwest of intersection of Leland St./Auto Center Dr./Ventura Road
Two-striped Garter Snake (*Thamnophis hammondii*)	**__/__/__/G4/S3S 4**	**Moderate.** Shrub habitats could support this species. Most of the site is not suitable habitat. Species was not detected during wildlife surveys. The nearest documented occurrence was 0.28 mile west of the Ventura River.
Tri-colored Blackbird (*Agelaius tricolor*)	**__/__/__/G2G3/S 1S2**	**Low.** Suitable habitat is not present on the site. Emergent vegetation surrounding McGrath Lake could be suitable, but biology of this area has been monitored heavily with no records of tricolored

Common Name (*Scientific Name*)	Status Fed/State/CRPR/ G-Rank/S-Rank	Potential for Occurrence in Project Impact Area*
		blackbird.
Burrowing Owl (*Athene cunicularia*)	**__/__/__/G4/S3**	**Low.** Open, grassy areas and edges of dunes could support this species. Most of the site is not suitable habitat. Species was not detected during wildlife surveys. The nearest documented occurrences were 500 feet south of McGrath State Beach campgrounds, a burrow at the edge of gravel pile at end of service road, and Point Mugu Naval Air Station.
Ferruginous Hawk (*Buteo regalis*)	**__/__/__/G4/S3S4**	**Low.** Open, grassy areas could support this species. No suitable habitat on-site. Species was not detected during wildlife surveys.
Western Snowy Plover (*Charadrius nivosus nivosus*)	**FT/__/__/G3T3/S2**	**Low.** Suitable habitat is not present on the site. The nearest documented occurrences were Mandalay State Beach, McGrath State Beach, Ormond Beach, Oxnard Beach, Ventura Beach, and the mouth of the Santa Clara River.
Western yellow-billed Cuckoo (*Coccycus americanus occidentalis*)	**FT/SE/__/G5T2T3/S1**	**Low.** Suitable habitat is not present on-site.
California Horned Lark *(Eremophila alpestris)*	**__/__/__/G5T3Q/S3**	**Low.** Suitable habitat was not present on the site. Species was not detected during wildlife surveys.
Belding's Savannah Sparrow *(Passerculus sandwichensis Beldingi)*	**__/SE/__G5T3/S3**	**Low.** Suitable habitat is not present on-site.
California Brown Pelican *(Pelecanus occidentalis californicus)*	**D/D/__/G4T3/S3**	**Low.** Suitable habitat is not present on-site.
Light-footed Ridgeway's Clapper Rail *(Rallus obsoletus levipes)*	**FE/SE/__/G5T1T2/S1**	**Low.** Suitable habitat is not present on-site.
Southwestern Willow Flycatcher (*Empidonax traillii extimus)*	**FE/SE/__/G5T2/S1**	**Low.** Suitable habitat was not present on the site. Species was not detected during wildlife surveys.
Bank Swallow *(Riparia riparia)*	**__/ST/__/G5/S2**	**Low.** Suitable habitat was not present on the site. Species was not detected during wildlife surveys.
California Least Tern (*Sterna antillarum browni*)	**FE/SE/__/G4T2T3Q/S2**	**Low.** Suitable habitat is not present on the site. The nearest documented occurrences were the Santa Clara River mouth, McGrath Lake, and Ormond Beach between Ormond Beach Generating Station and Perkins Road.
California Black Rail (*Laterallus jamaicensis coturniculus*).	**__/ST/__/G3G4T1/S1**	**Low.** Suitable habitat is not present on the site. The nearest documented occurrence was the mouth of the Santa Clara River.
Least Bell's Vireo *(Vireo bellii pusillus)*	**F3/SE/__/G5T2/S2**	**Low.** Suitable habitat is not present on-site.
Pallid Bat *(Antrozous pallidus)*	**__/__/__/G5/S3**	**Low.** Suitable habitat is not present on-site.
Mexican Long-tongued Bat *(Choeronycteris Mexicana)*	**__/__/__/G4/S1**	**Low.** Suitable habitat is not present on-site.
Western Mastiff Bat *(Eumops perotis)*	**__/__/__/G5T4/S3S4**	**Low.** Suitable habitat is not present on-site.

Common Name (*Scientific Name*)	Status Fed/State/CRPR/ G-Rank/S-Rank	Potential for Occurrence in Project Impact Area*
South Coast Marsh Vole *(Microtus californicus Stephensi)*	**__/__/__/G5T1T1 /S1S2**	**Low.** Suitable habitat is not present on-site.

Biological Resources Table 2 – Notes
*The project impact area includes areas that could be affected directly or indirectly by project impacts.
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
ST: State listed as threatened
SFP: Fully protected
D: Delisted taxon that is considered recovered
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
California Rare Plant Ranking (CRPR)
1A Presumed extirpated in California and either rare or extinct elsewhere
1B: Rare or endangered in California and elsewhere
2A: Presumed extirpated in California but more common elsewhere
2B: Rare or endangered in California but more common elsewhere
3: Plants for which we need more information- Review list
4:Plants of limited distribution – Watch list
0.1: Seriously threatened in California (over 80 of occurrences threatened/high degree and immediacy of threat)
0.2: Moderately threatened in California (20-80% of occurrence threatened/moderate degree and immediacy of threat)
0.3: Not very threatened in California (<20% of occurrence threatened/low degree and 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 = **Critically Imperiled** – At very high risk of extinction due to extreme rarity (often 5 or fewer populations)., very steep declines or other factors..
G2 = **Imperiled**- At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines or other factors. G3 = **Vulnerable** - At moderate risk of extinction due to very restricted range, relatively few populations (often 80 or fewer), recent and widespread declines or other factors.
G4 = **Apparently Secure**- Uncommon but not rare; some cause for long-term concern due to declines other factors.G5 = Secure-Common; widespread and abundant.
State rank (S-rank) is assigned much the same way as the global rank, except state ranks in California often also contain the imperilment status only within California's state boundaries
S1 = Critically Imperiled in state because of extreme rarity (often 5 or fewer populations) or because of other factors such as deep declines making it extremely vulnerable to extirpation from state.
S2 =Imperiled in the state because of rarity due to very restricted range, few populations (often 20 or fewer) , steep declines , or other factors machining vulnerable to extirpation from state.
S3 =Vulnerable in state due to restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the state.
S4 = Apparently secure – Unknown but not rare in the state; some cause for long-term concern due to declines or other factors.
S5 = Secure – Common, widespread, and abundant in the state.
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

Special-Status Plant Species

One special status plant species was detected on the site during the applicant's surveys (woolly seablite, described further below)(**Biological Resources Figure 3**), and also observed by staff during site visits in 2015. Nine special status species are known to

occur within 6 miles of the project site. The following special-status plant accounts are taken from the AFC (PP3 2015a), and verified by staff:

Woolly Seablite (*Suaeda taxifolia*)

Woolly seablite maintains no federal or state listing designation, but is a CNPS Rank 4.2 species, meaning it has limited distribution or it is infrequent throughout a broader area in California; it is moderately threatened; and its status should be monitored regularly (CNPS, 2015). The species is a perennial shrub, and typically occurs in coastal dune scrub. It was recorded at the MGS site, along the eastern side of Harbor Boulevard between Edison Canal and West 5th Street (CCH, 2015). During botanical surveys conducted by the applicant, approximately 1,100 individuals were observed within the P3 site. The species does not occur in the laydown area or location of the planned office building on the MGS site.

Ventura Marsh Milk-Vetch (*Astragalus pycnostachyus var. lanosissimus*)

Ventura marsh milk-vetch is a federally and state-listed endangered plant, and a CNPS Rank 1B.1 species, meaning it is rare throughout its range and seriously threatened in California (CNPS, 2015). It occurs in coastal upland terraces, coastal dunes, wetland transition zones and river edges, as well as recently disturbed sites (Meyer, 2007). There are four known occurrences of the species near the project site, including: 1) the Santa Clara River mouth; 2) McGrath State Beach; 3) in Oxnard at the northeastern corner of West 5th Street and Harbor Blvd, 90 meters north of 5th Street; and 4) in Oxnard 150 meters northeast of the intersection of West 5th Street and Harbor Boulevard (CCH, 2015). This species was not observed on the project site during botanical surveys.

Coulter's Saltbush (*Atriplex coulteri*)

Coulter's saltbush maintains no federal or state listing designation, but is a CNPS Rank 1B.2 species, meaning it is rare throughout its range and moderately threatened in California (CNPS, 2015). It occurs in sand dunes on the coast. The closest documented location is on a sandy-calcareous slope about 1.5 miles west of the Ventura River (CDFW, 2015a). This species was not observed on the project site during botanical surveys.

South Coast Saltscale (*Atriplex pacifica*)

South coast saltscale maintains no federal or state listing designation but is a CNPS Rank 1B.2 species (CNPS, 2015). It occurs on alkali soils on cliffs, bluffs, and in coastal strand vegetation. The closest known location is adjacent to Highway 101 about 1.5 miles west of the Ventura River (CCH, 2015). This species was not observed on the project site during botanical surveys.

Davidson's Saltscale (*Atriplex serenana var. davidsonii*)

Davidson's saltscale maintains no federal or state listing designation, but is a CNPS Rank 1B.2 taxon (CNPS, 2015). It occurs on alkali soils along roads and highways, and disturbed places. The closest location is in Oxnard in a disturbed area beside Ventura Boulevard north of Highway 101 (CCH, 2015). This species was not observed on the project site during botanical surveys.

Salt Marsh Bird's Beak (*Chloropyron maritimum*)

Salt marsh bird's beak is state and federally endangered, and CNPS Rank 1B.2 species (CNPS, 2015). It occurs in the upper areas of salt marshes, on beaches, and on alkali flats. The closest locations are McGrath State Beach; Ormond Beach on alkali flats northeast of the intersection of Arnold Road and Perimeter Road; and near Point Mugu (CCH, 2015). This species was not observed on the project site during botanical surveys.

Mexican Malacothrix (*Malacothrix similis*)

Mexican malacothrix maintains no federal or state listing designation, but is a CNPS Rank 1A species, meaning it is presumed extirpated or extinct because it has not been seen or collected in the wild in California for many years (CNPS, 2015). This species used to occur in sand dunes at the back of beaches. It was last documented in 1925 in the vicinity of Port Hueneme Beach Park, and is assumed to be extirpated (CDFW, 2015a). This species was not observed on the project site during botanical surveys.

Red (Sticky) Sand Verbena (*Abronia maritima*)

Red sand verbena maintains no federal or state listing designation, but is a CNPS Rank 4.2 species (CNPS, 2015). The species occurs on coastal dunes. It is not mapped in the CNDDB (Figure 4.2-1), but it is known to occur on Mandalay State Beach, McGrath State Beach, and other nearby locations (CCH, 2015). This species was not observed on the project site during botanical surveys, but was observed off-site on Mandalay State Beach property.

Dunedelion (*Malacothrix incana*)

Dundelion is a CNPS Rank 4.3 species (CNPS, 2015), meaning it has limited distribution or is infrequent throughout a broader area in California; it is not very threatened in California, but its status should be monitored regularly (CNPS, 2015). The species occurs on coastal dunes. It is not mapped in the CNDDB (Figure 4.2-1), but it is reported to occur in the vicinity of the project site (California Coastal Commission 2009). This species was not observed on the project site during botanical surveys.

Special-Status Wildlife

The applicant conducted general reconnaissance surveys of the project site during January 2015, and March 2015; staff visited the site on March 18, 2015, and November 19, 2015 . No protocol or focused surveys were performed as the potential for special-status wildlife species to occur within the proposed P3 site and construction laydown and parking areas is low. The following accounts focus on species with a moderate or high potential to occur on or near the project site, and that could be affected by project construction, demolition, or operation.

Globose Dune Beetle (*Coelus globosus*)

Globose dune beetle is designated by the CDFW (2015b) as a Special Animal. It occurs in foredunes and sand hummocks; and is most common under native dune vegetation. This species has been documented at Hueneme, Ventura, and Point Mugu (CDFW,

2015a). Suitable habitat is not present on-site. However, this species could occur in the dunes adjacent to the site's western boundary.

Western Pond Turtle (*Actinemys marmorata*)

Western pond turtle is a California Species of Special Concern. It occurs in permanent slow-moving fresh water such as creeks, ponds, lakes, and irrigation canals. The closest documented occurrence is the Santa Clara River estuary (CDFW, 2015a), and the species occurs in freshwater reaches of the Santa Clara River, as well. There is no suitable habitat for this species on the project site. Western pond turtles could occur in McGrath Lake and the surrounding riparian habitats.

Silvery Legless Lizard (*Anniella pulchra* or *A. stebbinsii*)

Silvery legless lizard is not listed as threatened or endangered, but has been identified by the CDFW as a California Species of Special Concern. The taxonomy of the species in the project region of California has not been determined; therefore, the uncertainty of the species name. Silvery legless lizards occur in sand dunes, loose soil, and leaf litter. The nearest documented location is immediately north of the site, east of McGrath Lake (CDFW, 2015a). The highly compacted soil on the site is not suitable habitat for this species, and much of the site is unsuitable habitat. There is a moderate potential for this species to occur on the project site.

Blainville's Horned Lizard (*Phrynosoma blainvillii*)

Blainville's horned lizard is a California Species of Special Concern. It occurs in shrub vegetation, often on sandy soil. It is known from about 3.5 miles northeast of the site near the Santa Clara River (CDFW, 2015a). This species could occur on the site, but it is unlikely given the highly compacted soil.

Two-striped Garter Snake (*Thamnophis hammondii*)

Two-striped garter snake is a California Species of Special Concern which occurs in creeks and in scrub habitat. The closest documented locality is 0.28 mile west of the Ventura River (CDFW, 2015a), approximately 6 miles upcoast (northwest) of the project site. The species could occur near the project site in McGrath Lake and the surrounding mule fat scrub, due to the presence of suitable habitat; but it is unlikely to occur on the project site.

Western Snowy Plover (*Charadrius nivosus nivosus*)

Western snowy plover is a federally-listed threatened species and a California Species of Special Concern. Critical habitat for western snowy plover is designated on the beaches and dunes west, northwest, and southwest of the project site (USFWS, 2012; and Figure 4.2-3). The beaches and sand dunes within Mandalay State Beach and McGrath State Beach in the immediate vicinity of the project site support both wintering populations and breeding populations of this species (California State Parks, 2013). The nesting areas are delineated with semi-permanent or seasonal symbolic fencing. Predators (crows, opossums, raccoons, and coyotes) and people and their unleashed dogs are the most significant threats to western snowy plovers at these state beaches (California State Parks, 2013). There is no suitable habitat for the species on the project

site. However, the northwest corner of the project site is approximately 500 feet from the closest potential nesting area.

California Least Tern (*Sterna antillarum browni*)

California least tern is a federally-listed endangered and state-listed endangered species. This species nests on relatively open beaches where vegetation is limited by tidal scouring and forages over open water. It nests in the immediate vicinity of the project between the Santa Clara River mouth and McGrath Lake; and Ormond Beach between Ormond Beach Generating Station and Perkins Road (CDFW, 2015a). Suitable nesting habitat is not present on site, but this species is known to nest on the beach in the immediate vicinity of the project site. It may also forage over Edison Canal.

California Black Rail (*Laterallus jamaicensis coturniculus*).

The California black rail is a state listed threatened species. California black rail inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. They require a constant water depth of approximately 1 inch, surrounded by dense vegetation for nesting. There is no suitable habitat for this species on the project site. This species is reported to occur between the McGrath State Beach campground and the Santa Clara River mouth, and could occur at McGrath Lake.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHODS AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

A significant impact is defined in the CEQA Guidelines 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, § 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 federally-protected wetlands as defined by section 404 of the Clean Water Act, (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

DIRECT AND INDIRECT IMPACTS AND MITIGATION

The CEQA Guidelines define direct impacts as those impacts that result from the project and occur at the same time and place as project activities. 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 subsection evaluates the potential direct and indirect impacts (both temporary and permanent) to biological resources from proposed P3 construction and associated demolition activities, operation, and maintenance. This section also details the applicant's proposed mitigation measures and staff's recommended conditions of certification, as necessary, to reduce impacts to less-than-significant levels.

Construction and Demolition Impacts to 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. **Biological Resources Table 4** below shows the acre amounts of vegetation communities that would be permanently and temporarily removed as a result of construction of the project.

Construction and demolition would mechanically remove 0.47 acres of non-native ice plant mats, and approximately 2.03 acres of woolly seablite/ice plant mats. The approximately 4.7-acre laydown areas and planned office space are previously disturbed, and construction of office and temporary construction laydown and staging will remove ruderal vegetation.

Project impacts to on-site vegetation would not require compensatory mitigation, including woolly seablite as discussed below under "Construction and Demolition Impacts to Special-Status Plant Species."

Biological Resources Table 4
Direct Surface Disturbance per Affected Vegetation Community and Project Component

Vegetation Communities/Cover Types	Location			
	Power Plant Site (acres)	**Construction Laydown Areas (acres)**	**Office Space (acres)**	**Total (acres)**
Ice plant mats	0.47	0.97	0	1.44
Woolly seablite/ice plant mats	2.03	0	0	2.03
Ruderal/developed	0.23	0.03	0	0.26
Coyote brush scrub	0.52	0	0	0.52
Myoporum grove	<0.01	0	0	<0.01
Total	3.26	1.0	0	4.26

Construction and Demolition Impacts to Special-Status Plant Species

Construction and demolition would mechanically remove vegetation on-site. On-site vegetation is highly disturbed, with little native vegetation remaining. Special-status plants recorded within the vicinity of the P3 site include Ventura marsh milk vetch (CRPR 1B.1), dundelion (CRPR 4.3), and others; see **Biological Resources Table 2**. Only one special-status species occurs on the project site, woolly seablite. Woolly seablite in the project area is interspersed with the invasive ice plant, forming thick mats. These thick mats are of diminished value to wildlife, and woolly seablite is likely present only because the project site is artificially saline, due to historical storage of ocean-dredged sediment (see above subsection titled “Coastal Zone Wetlands”). The Coastal Commission regulates wetlands within the Coastal Zone, and although woolly seablite may serve as an indicator species, that is, a species that may associate with wetlands, it is not in itself considered significant under CEQA guidelines for several reasons, discussed further below.

While not state or federally-listed, woolly seablite occurs on the California Native Plant Society’s (CNPS) Rare Plant Ranking System (CRPR) list 4.2. Impacts to plants with a CNPS rank may be considered under CEQA; however, staff typically does not consider impacts to plants of list 3 or 4 as significant, as these plants are on a CNPS watch list. Further, the CNPS has several factors to consider when evaluating the significance of impacts to CNPS list 3 and 4 plants, including whether the project would affect plants at the fringes of known spatial distribution, or if a project affects a type locality.

Approximately 1,000 woolly seablite plants would be removed by construction of the proposed project. This species is known to occur along the California coast from San Luis Obispo to Tijuana, Mexico, including Catalina Island and the Channel Islands.

Removal of this population would not impact a population on the fringes of its spatial distribution, nor is this population a known type locality—impacts which could be considered significant under CEQA (CNPS 2015). Therefore, staff has determined that the project would not have significant impacts to the special-status wooly seablite plant species, and no mitigation is required for this plant. The plant does, however, indicate the presence of a wetland under the jurisdiction of the Coastal Commission. The loss of wetlands are mitigated under CEQA, as they constitute a significant impact due to the role they play within an ecosystem. See the subsection "Construction and Demolition Impacts to Jurisdictional Wetlands," below.

Construction and Demolition Impacts to 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 project 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.

Construction and Demolition Impacts to Special-Status Wildlife

On-site vegetation provides little foraging value to wildlife, although it may be used occasionally for movement between patches of suitable habitat. Several special-status wildlife species such as the western pond turtle, Blainville's horned lizard, two-striped garter snake, least tern, western snowy plover, and California black rail may occasionally move through on-site wetlands, or attempt to forage in this habitat. Loss of the forage or other uses of the 2.03-acre wetlands under Coastal Commission jurisdiction would be mitigated through the acquisition of habitat compensation at a 2:1 ratio, as required by staff's proposed Condition of Certification **BIO-9**. See the subsection "Construction and Demolition Impacts to Jurisdictional Wetlands," below.

Immediately adjacent habitat such as McGrath Lake and surrounding habitat may support the sandy beach tiger beetle, globuse dune beetle, western pond turtle, silvery legless lizard, Blainville's horned lizard, and two-striped garter snake. These species may occasionally traverse the project site and laydown areas while moving between surrounding riparian or dune habitat. These species may also be subject to crushing or burying by increased traffic during construction and demolition. While there is a low potential for these impacts to special-status species, staff recommends the implementation of the following conditions to minimize and avoid impacts to special-status species.

Staff proposes Condition of Certification **BIO-7**, General Impact Avoidance and Minimization Measures. This condition contains a number of protective measures, including specific provisions for installing silt fencing along the northern boundary of the project site adjacent to McGrath Lake, and along the southern boundary of the project site adjoining Mandalay State Beach. Silt fencing was also proposed by the applicant (AFC; PPP 2015a). The applicant recommended fencing along the Edison Canal, and around sensitive habitat on-site. Staff agrees with installment of silt fencing as an appropriate impact avoidance measure for the project. Implementation of silt fencing would prevent and minimize terrestrial-based movement of small special-status wildlife

from adjacent dune and riparian habitat onto the project site. However, staff recommends fencing only the northern and southern project boundaries, for the reasons described further below.

Fencing the Edison Canal may unnecessarily impede animal movement, and given the distance from the project site, may be ineffective in preventing small special-status wildlife from accessing the project site. Terrestrial-based movement from the west onto the project site (and off) is expected to be minimal given the developed nature of the site, and the noise, perimeter fencing, and human presence would also likely discourage animal presence. The western boundary of the project site is also primarily ice plant mats and dune habitat elevated above the adjacent beach; staff determined that silt fencing is not appropriate for this area, as it may impede natural sedimentation processes, and the likelihood of crushing or burying special-status species in this area is too low to warrant such a measure.

Nesting special-status birds in the adjacent dunes and riparian habitat could be directly impacted by construction and demolition activities. Both the western snowy plover and California least tern are federally–listed, and are known to nest on the beaches and dunes north of the project site, and to the south of the project site along the Mandalay State Beach. Staff recommends implementation of Condition of Certification **BIO-8**, which applies specifically to breeding birds and requires pre-construction surveys as well as ongoing monitoring during breeding season.

Indirect impacts could occur to special-status wildlife in the dunes and riparian habitat adjacent to the P3 site during construction and demolition. These include disturbance from lighting, as well as degradation of habitat from invasive weeds, storm water runoff, or groundwater contamination. These impacts are discussed under “General Construction and Demolition Impacts,” below.

Staff recommends that a Designated Biologist be assigned to ensure implementation of all avoidance and minimization measures. The Designated Biologist may be assisted by one or more Biological Monitors as necessary. Staff’s proposed Conditions of Certification **BIO-1** through **BIO-4** specify the qualifications for the Designated Biologist and Biological Monitor(s) and their duties and authorities.

Staff also recommends implementation of a Worker Environmental Awareness Program (WEAP), which is a mechanism for training the workers on protection of the biological resources described in this document. Staff’s proposed Condition of Certification **BIO-5** requires the applicant to develop, in consultation with the Designated Biologist, and implement a WEAP during all construction and demolition activities.

Condition of Certification **BIO-6** would require a Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP), which contains all protective measures, survey guidelines, permit requirements, etc., that apply to sensitive habitat and species. The Designated Biologist would prepare the BRMIMP, and it would used by the Biological Monitor(s) and other on-site plant personnel in daily activities.

Construction and Demolition Impacts to Jurisdictional Wetlands

On-site Jurisdictional Wetlands

Implementation of the proposed project would remove approximately 2.03 acres of wetlands under jurisdiction of the Coastal Commission. These wetlands contain three plants common to wetlands (woolly seablite, pickleweed, and slenderleaf iceplant) but lack the remaining two important characteristics common to wetlands such as hydrology and hydric soils, and also contain plants common to upland habitat.

The Coastal Commission uses this broad approach (i.e. a one-parameter approach) in determining wetland extent as a conservative means of defining and conserving wetlands, including conserving upland habitat surrounding a wetland. This conservative approach is intended to identify and conserve the form and function of a wetland in its entirety, including preserving areas immediately adjacent a wetland, which provide critical uses such as dispersion of overland water flow forces, habitat for wildlife, and backwater inundation/absorption zones.

Because the wetlands on-site are degraded and contain plants suited to upland growth, there is little to no differentiation between upland habitat surrounding the wetland, and the wetland, itself. There is no tidal influence to cause increased salinity, and water inputs are only from rainfall. Therefore, the approximately 2.03-acre wetland has diminished value, form, and function. For these reasons, staff considers the wetlands to provide little beneficial value to wildlife, nor does the site on its own provide many of the positive benefits of a wetland, such as water filtration, foraging and habitat for wildlife, or water reabsorption.

Typically, the Coastal Commission recommends mitigation of wetlands under its jurisdiction at a 3:1 ratio (Engle, 2015). However, given the artificially-created limited utility and value of the site, staff concludes that a mitigation ratio of 3:1 is inappropriately high for this site, and recommends a habitat compensation ratio of 2:1. A 2:1 ratio would achieve the goals of the CDFW and the federal government in achieving “no net loss” of wetlands, and would simultaneously satisfy the Coastal Commission regulations in appropriately mitigating for development of the site.

The site contains three plants indicative of wetlands-woolly seablite, pickleweed, and slenderleaf iceplant, each potentially suited to somewhat saline conditions. Appropriate mitigation therefore consists of preservation of an equivalent saline (i.e. not freshwater) system at a 2:1 mitigation ratio. Estuarine systems are saline, experiencing both tidal flushing as well as surface (freshwater) flows, and therefore can have a wide variety of salinity values from high (hyperhaline, salinity greater than 40 parts per thousand) to low (oligohaline, salinity less than five parts per thousand). Habitat considered estuarine wetlands include estuaries, lagoons, and salt marshes; and would replace the loss of on-site salt marsh species such as pickleweed. Therefore, staff recommends Condition of Certification **BIO-9**, Wetland Mitigation, as appropriate compensation for the loss of the on-site Coastal Commission jurisdictional wetland at a ratio of 2:1. Mitigation should ideally take place within the affected watershed (Santa Clara-Calleguas Creek Watershed), but may take place elsewhere if suitable mitigation opportunities are not found within the appropriate watershed. With implementation of **BIO-9**, impacts to

Coastal Commission jurisdictional wetlands would be mitigated below the level of significance.

Off-site Jurisdictional Wetlands

The proposed project site is immediately adjacent to McGrath Lake and associated freshwater wetlands (California bulrush marsh, arroyo willow thickets, and mulefat scrub). Indirect impacts may result if construction contaminants, sediment, or untreated storm water 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 Storm Water Pollution Prevention Plan (SWPPP); this requirement 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 special-status wildlife from foraging and nesting near the proposed project area, due to interference with communication, disturbance or disruption of activities, or startling from loud noises. Avian species are most likely to be adversely impacted by construction and demolition noise. 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.

Studies have shown that elevated noise levels 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; causing 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).

Demolition and construction would generate sudden or loud startling noises, and could result in flushing birds. Flushing of nesting birds could increase the risk of predation or cause nest failure if birds repeatedly leave the nest and eggs are not properly incubated, or eggs or nestlings are knocked from the nest by a flushing parent. Foraging birds are expected to have more flexibility in avoiding areas with disruptive noise, but nesting birds would be vulnerable to these effects and take of nests protected under the MBTA and California Fish and Game Code could occur. Noise levels may be generally considered to constitute an adverse impact when above 60 dBA, however, this is a

general guideline used by Energy Commission staff. Recent literature suggests that noise levels over 100 decibels may not disturb western snowy plover (USFWS 2011), and, more recently, the Energy Commission declined 60 decibels as too low a disturbance threshold to use for avian species (CEC 2014).

Special-status species present in the adjacent sensitive habitats such as dune habitat and western snowy plover critical habitat to the west and McGrath Lake and adjacent wetlands, and may be impacted by construction and demolition noise. These habitats support a variety of special-status birds that may breed in these areas, including the western snowy plover (federally-listed threatened), California least tern (federally and state-listed endangered), and California black rail (state-listed threatened).

Construction impact noise would be created by installation of the air-cooled, single-fuel combustion turbine generator and auxiliary facilities, the build-out of additional office space for on-site staff, as well as grading, paving, and other on-site improvements such as rerouting gas lines. Construction equipment required onsite during a 21-month period includes heavy machinery like excavators, graders, cranes, and generators, including a month's usage of a pile driver.

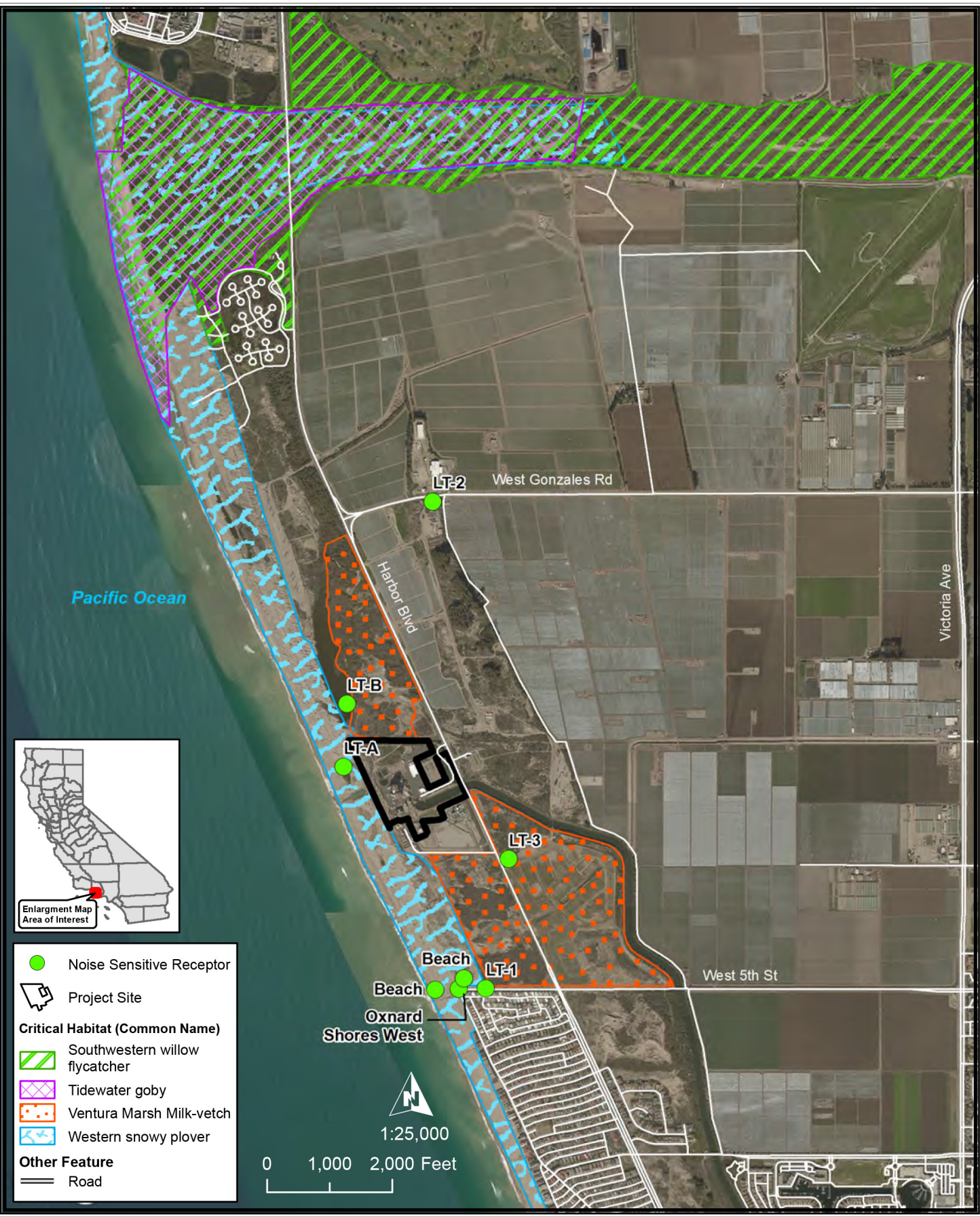
Demolition noise would be generated during removal of Units 1 and 2, as well as the 200-foot tall stack, and removal of transformers and other electrical equipment between Units 1 and 2 and the switchyard (PPP 2015y). Decommissioning would begin June 2020 and be completed by late 2022, given current projections by the applicant. Equipment required onsite during this timeframe would be similar to that used during construction.

The applicant determined noise impacts at offsite sensitive receptors, called LT-1, LT-2, and LT-3 (PPP 2015a), based on human presence. While this is a common technique for determining noise impacts, sensitive habitat occurs closer to the project site, specifically, the nesting least tern habitat on dunes north and south of the site, and critical habitat for the western snowy plover habitat on beaches immediately north, west, and south of site. Staff coordinated with Noise and Vibration staff to determine noise impacts at two additional points: LT-A and LT-B (**Biological Resources Figure 4, Offsite Noise Locations**). LT-A occurs 500 feet to the west, at the edge of the dunes and western snowy plover critical habitat, and LT-B occurs at a point 1,000 feet to the north of the site, at the edge of the wetlands adjacent McGrath Lake. These two points are considered to more accurately reflect noise at sensitive wildlife habitats, particularly those supporting special-status nesting birds. Approximate ambient noise levels were also measured at several of these locations; staff uses the most quiet noise measurements taken to establish a conservative baseline.

Each of the aforementioned locations with noise-sensitive biological resources is listed in **Biological Resources Table 5**, below, along with ambient noise levels and estimated construction and demolition noise levels at each location.

BIOLOGICAL RESOURCES - FIGURE 4

Puente Power Project PSA - Offsite Noise Locations



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: NRG, OpenStreetMap, Bing Aerial and ESRI.

Biological Resources Table 5
Summary of Noise Levels at Locations with Noise-sensitive Biological Resources

Location	Ambient Noise Level (dBA)	Approximate distance from Power Block 1 (feet)	Construction Noise Level (dBA)	Demolition Noise Level (Worst Case) (dBA)
Ambient Beach Noise	63-78[1]	~950	N/A	N/A
Oxnard Shores West	49-62[1]	~4,000	47[3]	44[4]
LT-1	55[2]	~3,940	47[3]	45[4]
LT-2	61[2]	~4,100	47[3]	44[4]
LT-3	63[2]	~2,600	52[3]	49[4]
LT-A	N/A	500	N/A	~64[5]
LT-B	N/A	1,000	N/A	~57[5]

[1]Measurement depicted on Figure 4.7-1, PPP 2015a, page 4.7-29.
[2]Taken from PPP 2015y, page 4-25, Table 4.7-5a
[3]Taken from PPP 2015a, page 4.7-37, Table 4.7-6
[4] Taken from Table 4.7-2, PPP 2015y, page 4-22.
[5] Calculated by noise and vibration staff using PPP 2015y data.
N/A means "not available".

Demolition noises would not exceed the construction noise levels identified in the AFC (PPP 2015a), and in fact, would likely be lower than shown. This is because staff chose the most conservative, worst-case predicted sound levels, and because the construction and demolition noises reflected in **Biological Resources Table 5** are baseline numbers, with no on-site mitigation, such as noise fencing or implementation of other noise-dampening measures.

As shown in **Biological Resources Table 5**, average levels of construction and demolition noise at measuring locations range from a low of 44 dBA to a high of 64 dBA. These levels are lower than ambient levels at all monitoring stations. At point LT-A and LT-B, construction noise levels are unknown, but are assumed to be within the range of demolition noise levels. These worst-case noise levels are extremely conservative, as discussed above. At point LT-A, which is the nearest point of dune and western snowy plover critical habitat, the noise levels are within the lower range of ambient noise levels generated by surf noise, and are therefore not considered significant.

At point LT-B, the exact ambient noise levels are not known; however, the predicted construction and demolition noise level of 57 dBA is lower than staff's informal threshold of 60 dBA. Noise impacts at point LT-B are therefore considered less than significant. Construction and demolition noise impacts to birds nesting off-site are not expected to be significant because of the above-stated reasons; however, staff and the applicant have proposed conditions of certification to minimize impacts to the extent practicable. These measures would reduce these less-than-significant effects on birds. To mitigate noise impacts to birds, the applicant has incorporated additional minimization and mitigation measures into the project description. Typical noise abatement mitigation includes use of noise dampeners and utilization of high-reach excavators to shear steel,

as well as use of construction blankets and other noise-dampening devices (**NOISE-6**). Condition of Certification **NOISE-6** also requires that equipment contain current noise-reducing specifications or modifiers so that it is the best available equipment.

The loudest noise impacts would be generated by the planned explosive demolition of Units 1 and 2 and the stack; and would likely consist of several very short and loud explosions (based on consultation with Noise and Vibration staff), of around 100-110 dBA when measured at nearest human receptor LT-1 (PPP 2015y), Table 4.7-1b. Because these events last just moments, they are not represented in **Biological Resource Table 5**. The applicant has committed to dampening these effects to the extent possible (PPP 2015y; Section 4.2.2), and staff recommends that blasting be undertaken outside the nesting season of special-status avian species (**BIO-8**). Staff has also recommended (**BIO-8**) that pile-driving, the next loudest activity, also take place outside nesting season.

The applicant has also committed to monitoring snowy plovers and least terns within 0.25 mile of the project site, in order to determine if nesting behavior is adversely affected by construction and demolition activities, and furthermore, has agreed to temporarily halt any work that appears to initiate abnormal nesting behavior such as flushing or other displays of agitated behavior. Staff agrees with this recommendation, and has incorporated this into Condition of Certification **BIO-8**, Pre-construction Nest Surveys and Impact Avoidance and Minimization Measures for Breeding Birds.

Lighting

Project construction and demolition activities are anticipated to occur as single-shift, 10 hours per day, five days a week; however, some limited construction activities could continue during a second shift. During startup and commissioning, work may continue for 24 hours per day. 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 MGS and nearby vehicle traffic 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 on-site, and use switched lighting where possible (PPP 2015a). These measures are incorporated into Condition of Certification **VIS-2** (refer to the **Visual Resources** section for the full text of this condition). Plant operational lighting would be designed to illuminate building interiors and entrances, outdoor equipment platforms and stairs, and the building perimeter and entrance gate (the parking lot is already illuminated, as are Units 1, 2, and the stack). These lighted areas would be lit in such a way to minimize off-site illumination, and minimize light use (PPP 2015a; page 4.13-14). With implementation of these measures, impacts to wildlife from construction and demolition night time lighting would be less than significant.

Fugitive Dust

Active soil grading over the project site and laydown areas would occur over a two-month period; however, construction traffic and other activities could result in disturbance of the soil's surface during the entire construction timeframe. These activities could result in increased wind erosion of the soil, which can have deleterious physiological effects on plants, especially vegetation within sensitive habitat, such as McGrath Lake and associated wetland restoration site immediately north of the project. Modeling conducted by the applicant indicates that the site has a high potential for wind erosion (PPP2015a).

The applicant has committed to reducing soil erosion through implementation of BMPs, which include watering to suppress fugitive dust, using straw bales and silt fences (silt fencing is incorporated into **BIO-8**), and limiting exposed areas. The applicant has also prepared a draft Storm Water Pollution Prevention Plan (SWPPP) as part of the Application for Certification (PPP 2015a, Volume 2; Appendix A-8), which will guide development and deployment of such measures. Erosion control BMPs developed in accordance with the SWPPP would be used to minimize erosion at the site during project 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.

Staff has further proposed conditions of certification to avoid and minimize impacts of dust generated by construction and demolition activities. Condition of Certification **AQ-SC3** requires specific measures to minimize fugitive dust, and Condition of Certification **AQ-SC4** requires construction monitoring for visible dust plumes and remediation measures in the event visible dust plumes are observed. With implementation of these conditions of certification, 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 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 wetlands north of McGrath Lake, immediately adjacent to the northern boundary of the project site, are undergoing restoration, and are therefore particularly vulnerable to weed infestations until native vegetation is 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 greater vicinity of the project site because non-native plants can displace native plants and supplant wildlife foods that are important to herbivorous species, resulting in overall habitat degradation.

Substantial populations of the invasive ice plant exist within the proposed project area. While this species is not aquatic, it may encroach upon sensitive off-site habitat at the McGrath wetlands. No other substantial populations of weedy species exist on the

project site; however, to avoid and minimize the spread of existing weeds and the introduction of new ones, weed management measures are recommended. 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. Storm water 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 would 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.

Operational Impacts

Avian Collision and Electrocution

The McGrath Lake and wetlands adjacent to the project site 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 project 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 project 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 exhaust stack would be 188 feet tall, similar to the existing MGS exhaust stacks, and is therefore not expected to increase the potential for avian collisions. The project would connect to the regional electrical grid using the existing SCE switchyard located adjacent to the project site. No new offsite transmission lines are proposed. The project would require construction of four new 100-foot tall poles to connect into the existing SCE switchyard via new 220-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 220-kV on-site transmission line that would connect the project to the off-site SCE substation has a low likelihood to result in bird electrocution.

The new on-site generation tie lines would be entirely within the developed site, near the existing transmission lines and tall generation facility structures. The new project generation tie line would not appreciably increase collision risk over baseline conditions. Nonetheless, because of the presence of listed species in the adjacent habitat, and the likelihood that they and other special-status birds fly over the project site en route, staff proposes that the applicant 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.

Air Emissions – Nitrogen Deposition

Staff addressed the potential for deposition of nitrogen to affect sensitive biological resources within six miles of the proposed P3 project (**Biological Resources Appendix-1, Nitrogen Deposition Analysis**). Nitrogen deposition is the input of nitrogen oxides (NO_x) and ammonia (NH_3) derived pollutants, primarily nitric acid (HNO_3), directly deposited from the atmosphere to the biosphere. Nitrogen deposition sources are primarily vehicle, agriculture, and industrial 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. In the project vicinity, these communities include coastal dunes and wetlands (Weiss 2006).

Nitrogen deposition artificially fertilizes the soil and creates better conditions for non-native species to persist and to ultimately displace the native species, resulting in type conversion (conversion of one habitat type to another). Proliferation of weedy species and type conversion of coastal sage scrub to nonnative grasslands are factors that have contributed to the coastal California gnatcatcher's decline, and prevention of type conversion and habitat degradation are priorities for the recovery of the species

(USFWS 2007a). San Diego fairy shrimp are vulnerable to grass invasions that shorten the inundation periods of vernal pools (Weiss 2006).

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).

Both terrestrial and aquatic habitat may be sensitive to nitrogen deposition. Sensitive habitat in the greater vicinity of the project includes coastal sage scrub, wetlands and intertidal salt marshes, Mugu Lagoon, and the McGrath Lake and surrounding wetlands. The herbaceous habitat on beaches west of the site may also be sensitive to nitrogen deposition. These protected areas support state and federally-listed species, including western snowy plover (federally-listed threatened), light-footed Ridgeway's clapper rail (federally and state-listed endangered), Belding's savannah sparrow (state-listed endangered), and California least tern (federally and state-listed endangered). The McGrath State Beach and Santa Clara estuary are also included within staff's analysis.

Biological Resources staff has undertaken a qualitative analysis of nitrogen deposition impacts, for several reasons. As a peaker plant, the proposed project would only operate around five percent of the time, thereby only sporadically causing emissions. Emissions were modeled by the applicant and verified by Air Quality staff, but have numerous conservative assumptions built into the results, as discussed in **Biological Resources Appendix-1**. These assumptions result in a highly conservative level of nitrogen deposition being reported. Staff has also undertaken a qualitative approach as it mirrors the state of California's approach in identifying and reducing nitrogen emissions. This entails utilizing a region-wide approach when weighing the deposition rates of any particular project, and instead of viewing them singularly, may often view deposition in the region as a whole.

For example, the proposed project occurs within the Ventura County Air Pollution Control District (VCAPCD). The VCAPCD (under oversight of the Environmental Protection Agency) implements the federal Clean Air Act. Under this program, the VCAPCD allows for the purchase of Emission Reduction Credits (ERCs), which offset emissions for the entire region, ensuring that emissions overall continue to decrease. Finally, baseline data for nitrogen deposition is outdated, and staff only has data from 2002 for the region (Tonneson et al 2007). Since that time, the VCAPCD's region-wide approach has reduced the atmospheric load of nitrogen oxides, see **Biological Resources Appendix-1, Figure Ndep-2,** for more information.

Staff reviewed the Clean Air Act (CCA), and determined that "secondary constituents", including nitrogen oxides among other pollutants, are considered within the CCA. The CCA sets secondary national ambient air quality standards (NAAQS), standards designed to protect public welfare from any known or anticipated adverse effects of a pollutant. In this context, "public welfare" includes soils, water, wildlife, vegetation, visibility, weather, and climate, as well as effects on man-made materials, economic values, and personal comfort and well-being (U.S. EPA 2016 and U.S. EPA 2008). The EPA uses NO_2 as the indicator for the larger group of oxides of nitrogen (NOx). The

project modeling of NO_2 emissions is zero (0) micrograms (TN 206791, Table 4.1-29) on an annual basis, **Table 6, Secondary Air Quality Standards**.

Table 6 Secondary Air Quality Standards

Federal NO_2 Standard	100 µg/m^3 (0.053ppm)
Modeled Maximum NO_2 emissions	0 µg/m^3

The secondary NAAQS for NO_X is identical to the primary standard set in 1971, an annual average not to exceed 0.053 ppm nitrogen dioxide (NO_2). Based on the applicant's modeling, the project would not contribute to nitrogen dioxide in the region, thereby complying with the Clean Air Act, and its protections of wildlife and vegetation.

In its Data Response, set 2, dated November 30, 2015, 23-26, the applicant modeled project-specific nitrogen deposition rates (PPP 2015z). Air Quality staff performed an independent assessment of the data's accuracy, including modeling, to verify the applicant's results, see **Biological Resources Appendix-1**. The applicant used critical loads to describe modeled nitrogen deposition results (TN 206791, Table 4.2-4 (Revised 11/18/15)). Critical load is defined as the input of a pollutant (here, nitrogen and its oxides) below which no detrimental environmental effects occur. Critical loads are taken from Pardo, et al, 2007. This conservative quantitative analysis used worst-case modeled scenarios. In this context, "worst-case" means the maximum predicted operational capacity of the project, along with atmospheric conditions that encourage deposition primarily around the plant. This conservative modeling effort showed that deposition of nitrogen with Unit 1, Unit 2, and the new gas turbine, as well as an emergency turbine generator would supply 0.08 to 2.85 percent of the critical load for nitrogen, by each vegetation type. This is considered an insignificant level of deposition for each of these habitat types.

While these levels of nitrogen deposition are considered insignificant, the proposed project would exceed limits for air emissions for particulate matter (PM). Nitrogen oxides are a precursor to PM formation, and therefore, the applicant would have to provide mitigation, including provision of ERCs.

Given the extremely conservative assumptions in this modeled data, the very low percentage of nitrogen contributed to critical load, and other factors discussed above, staff does not expect any significant impacts to occur from nitrogen deposition in sensitive habitat.

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). The resource agencies often use a threshold of 60 dB as a threshold for adverse noise impacts. Biological resources staff coordinated with Noise and Vibration staff to determine operational noise at a point LT-A and point LT-B (**Biological Resource Figure 4, Predicted Offsite Noise**), to determine potential noise effects on sensitive habitat to the west (beaches and critical habitat for western snowy plover), and to the north (McGrath Lake and wetlands). Operational noise levels at LT-A would be

approximately 54 decibels, and operational noise levels would be approximately 55 decibels at LT-B with average wind conditions. These levels are also well within the standard of 60-65 decibel informal threshold, and are lower than the ambient noise level of the beach and ocean surf noise, measured in the area as ranging from 63-78 dB, **Biological Resources Table 5**.

Birds at the site are expected to be acclimated to the noise of the ocean, the adjacent roads, the MGS, and human development noise created by residential uses to the south of the site. Staff expects no significant impacts associated with operational noise of the P3 project.

CUMULATIVE IMPACTS AND MITIGATION

Under the CEQA Guidelines, "a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts" (Cal Code Regs., tit.14, §15130(a)(1)). Cumulative impacts must be addressed if the incremental effect of a project, combined with the effects of other projects is "cumulatively considerable" (Cal Code Regs. tit. 14, §15130(a)). Such incremental effects are to be "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, §15164(b)(1)). Together, these projects comprise the cumulative scenario which forms the basis of the cumulative impact analysis.

Staff considered numerous projects within the vicinity of the project, including projects that resulted in development of native vegetation, or those that could overlap potential impacts of the P3 project – see **Biological Resources Appendix-2**; full descriptions (where available) are available in the **Executive Summary** of this document. Examples of projects included for the biological resources cumulative analysis are the coastal project "Beachwalk on the Mandalay Coast" (approximately one-half mile to the south), and the inland "Teal Club Specific Plan" (approximately 2.8 miles to the east). Projects were excluded from analysis if they were determined to have no biological resources present on-site or immediately adjacent the project, or if they were to occur within highly developed areas of Ventura County.

Due to ongoing operation of the MGS, the proposed P3 site is highly disturbed, is devoid of natural vegetation, and does not provide suitable habitat for special-status species. Indirect cumulative effects could include disruption from lighting, storm water runoff and spills, or spread of invasive weeds. Implementation of Conditions of Certification **BIO-1** through **BIO-7** would minimize or avoid construction-related impacts from lighting, spread of invasive weeds, and storm water runoff and spills from the project.

Noise effects in combination with P3 construction and demolition noise could result in cumulative impacts to birds such as western snowy plover. Condition of Certification **BIO-8** requires the project owner to take noise measurements during construction and demolition activities. With implementation of Condition of Certification **BIO-8**, the proposed project's contribution to noise impacts at locations with noise-sensitive biological resources would not contribute considerably to cumulative effects. The projects identified in staff's cumulative project list were too far from the project, or would

likely have impacts that did not overlap spatially or geographically with the project. No other projects with similar indirect cumulative effects were identified during staff's cumulative analysis, and the project impacts would not be expected to be cumulatively significant with mitigation for effects such as lighting, noise, spread of invasive weeds, or storm water runoff and spills These mitigation measures include Conditions of Certification **BIO-2**, **BIO-4**, **BIO-6** and **BIO-7**.

Although not identified during staff's analysis, it is possible that other projects could have related direct cumulative effects, including loss of wetlands under Coastal Commission jurisdiction. A desktop search using Google Earth maps and the USFWS's National Wetland Inventory map did not reveal any wetland habitat associated with the cumulative projects; however, staff does not have sufficient data to be sure that small wetlands do not exist. As no wetland was large enough to be identified during staff's review, it is assumed that any wetlands lost to other development projects would be small, and that the project's incremental effects would not be cumulatively considerable with implementation of staff's recommended Condition of Certification **BIO-9**.

In conclusion, the proposed project would not contribute considerably to cumulative effects to biological resources.

COMPLIANCE WITH LORS

The proposed project must comply with LORS that address state and federally listed species, as well as other sensitive biological resources. The project's compliance with applicable LORS is discussed in **Biological Resources Table 7, Conformance with Laws, Ordinances, Regulations, and Standards.**

Biological Resources Table 7
Conformance with Laws, Ordinances, Regulations, and Standards

Applicable LORS	Description	Compliance Determination	Discussion
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.	Yes	Construction and operation of the proposed project would not result in any impacts to federally-listed species or their critical habitat.

Applicable LORS	Description	Compliance Determination	Discussion
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.	Yes	No Waters of the U.S. would be impacted by the project.
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.	Yes	Conditions of Certification **BIO-1**, **BIO-2**, and **BIO-4** ensure qualified biologists are available during construction and to conduct pre-construction surveys. **BIO-8** provides for pre-construction nest surveys, protective buffers, and monitoring if nests are found. **BIO-8** prohibits explosive demolition of MGS Unit 1, 2, and stack during nesting season
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.	Yes	Potential impacts to state-listed species would be less than significant with conditions **BIO-7** and **BIO-8**.
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.	Yes	Potential impacts to state-listed species would be less than significant with conditions **BIO-7** and **BIO-8**.
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.	Yes	There are no impacts to fully protected species associated with the P3 project.

Applicable LORS	Description	Compliance Determination	Discussion
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.	Yes	Conditions of Certification **BIO-1**, **BIO-2**, and **BIO-4** ensure qualified biologists are available during construction and to conduct pre-construction surveys. Condition of Certification **BIO-8** provides for pre-construction nest surveys, protective buffers, and monitoring if nests are found, and the project is required to implement a Worker Environmental Awareness Program (WEAP) (**BIO-5**) to educate workers about compliance with environmental regulations, including Fish and Game Code. In addition implementation of **NOISE-6** through **NOISE-8**would reduce impacts to nests and eggs to less than significant.
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.	Yes	Conditions of Certification **BIO-1**, **BIO-2**, and **BIO-4** ensure qualified biologists are onsite during construction and to conduct pre-construction surveys. Condition of Certification **BIO-8** provides for pre-construction nest surveys, protective buffers, and monitoring if nests are found, and the project is required to implement a WEAP (**BIO-5**) to educate workers about compliance with environmental regulations, including Fish and Game Code.

Applicable LORS	Description	Compliance Determination	Discussion
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.	Yes	Construction of the proposed project would not result in any impacts to any river, stream, or lake.
California Coastal Act (Public Resources Code, section 30231)	The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface waterflow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams. The administering agency is the California Coastal Commission.	Yes	The project maintains a buffer area from riparian habitat to the north (McGrath Lake and associated marsh). Implementation of **BIO-7** would control runoff and spoils storage methods.
California Coastal Act (Public Resources Code, section 30233)	The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects. The administering agency is the California Coastal Commission.	Yes	Potentially feasible alternative site configurations would avoid impacting Coastal Commission jurisdictional wetlands on-site (see the **Alternatives** section of this document). Impacts to wetlands under the California Coastal Act are mitigated through adoption of staff's recommended condition **BIO-9**.

Applicable LORS	Description	Compliance Determination	Discussion
Native Plant Protection Act of 1977, Fish and Game Code, §1900 et seq.	The Native Plant Protection Act designates state rare and endangered plants and provides specific protection measures for identified populations. The act also includes a salvage provision, enabling CDFW to collect rare and endangered plants from properties in advance of construction or other activities that would destroy the plants. The administering agency is the CDFW.	Yes	The project has less than significant impacts upon woolly seablite, which is state rare, but not significant under CEQA. No other rare or endangered plants exist on the project site.
Porter-Cologne Water Quality Control Act	Regulates discharges of waste and fill materials to waters of the state, including "isolated" waters and wetlands.	Yes	The project does not affect any waters of the state, or state wetlands
Local			
City of Oxnard Coastal Land Use Plan policies 6d, 6e; 10a-d, 10g	Encourage preservation and management of biotic resources, including special-status species. The administering agency is the city of Oxnard.	Yes	Condition **BIO-1** through **BIO-9** all act to preserve and on-site and adjacent off-site habitat
City of Oxnard General Plan §17-20, (A)(3)	Places constraints on sensitive habitat areas, but do not supersede CDFW and USFWS requirements. The administering agency is the City of Oxnard.	Yes	The project does not impact any sensitive habitat areas

With implementation of staff's proposed conditions of certification, the proposed project would comply with all LORS pertaining to biological resources. Conditions of certification **BIO-1** through **BIO-7** pertain to minimization of general construction impacts to plants and wildlife, and habitat. These conditions minimize and avoid any indirect impacts such as introduction of invasive weeds off-site. Condition of Certification **BIO-8** requires pre-construction surveys for nesting birds within the project site, and installation of an appropriate buffer if nesting birds are found, ensuring compliance with the Endangered Species Act (ESA). Condition **BIO-8** also requires that the project owner install silt fencing to minimize impacts to terrestrial species and prevent erosion runoff from the project site into adjacent habitat. Condition of Certification **BIO-9** requires habitat mitigation at a 2:1 compensation ratio for loss of wetlands under the jurisdiction of the Coastal Commission, ensuring compliance with the California Coastal Act. Lastly, LORS specific to avian species (ESA and MBTA) are maintained through implementation of conditions **NOISE-6** through **NOISE-8** and **BIO-8**, ensuring that noise impacts do not adversely affect nesting birds.

CONCLUSIONS

The project site and laydown area is an industrial brownfield site with an operating power plant, the Mandalay Generating Station. Although the majority of habitat on site is disturbed with nonnative iceplant mats, one special-status species, woolly seablite, occurs on the project site. The rest of the site is developed, paved, or covered with

ruderal (weedy) species, and ornamental landscaping. Special-status wildlife are not expected to occur on the site; however, dunes to the west of the site support nesting western snowy plover (federally-listed threatened) and critical habitat for western snowy plover, as well as nesting habitat for the California least tern (federally and state-listed endangered). Salt marsh habitat north of McGrath Lake and wetlands immediately north of the project site may support special-status birds including the Belding's savannah sparrow (state-listed endangered), and California black rail (state-listed threatened). 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 8**. With implementation of proposed conditions of certification, compliance with LORS would be achieved and direct, indirect, and cumulative impacts would be avoided, minimized, or mitigated to less-than-significant levels.

Biological Resources Table 8
Summary of Impacts to Biological Resources from the Proposed Project

Impact	Condition of Certification	Significance Determination
CONSTRUCTION IMPACTS		
Native vegetation: removal of native vegetation	• **BIO-1 through BIO-4** dictates the selection and duties of a Biological Monitor(s) and Designated Biologist to mark sensitive biological areas and oversee construction	Less than significant
Common wildlife: disturbance and injury or mortality to common wildlife, including nesting birds	• **BIO-1 through BIO-4** dictates the selection and duties of a Biological Monitor(s) and Designated Biologist to oversee construction and coordinate mitigation • **BIO-7** limits disturbance area; • **BIO-8** requires pre-construction nest surveys and impact avoidance.	Less than significant with implementation of 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 a SWPPP to control runoff and prevent contamination; • **AQ-SC3** requires measures to minimize fugitive dust; • **AQ-SC4** requires construction monitoring for visible dust plumes and remediation measures in the event visible dust plumes are observed.	Less than significant with implementation of conditions of certification

Impact	Condition of Certification	Significance Determination
Special-status wildlife: disturbance from noise and lighting, habitat degradation from invasive weeds, stormwater runoff, or groundwater contamination	• **BIO-1 through BIO-4** dictates the selection and duties of a Designated Biologist and Biological Monitor(s) and to oversee mitigation and perform monitoring of sensitive resources • **BIO-7** confines work to delineated areas and controls invasive weeds; • **BIO-8** requires pre-construction nest surveys and impact avoidance, including focused surveys for light-footed clapper rail; • **SOIL&WATER-1** requires a SWPPP to control runoff and prevent contamination; • **VIS-2** minimizes offsite lighting; • **BIO-8** prohibits explosive demolition of the MGS during nesting season	Less than significant with implementation of conditions of certification
Jurisdictional wetlands: degradation from runoff of sediment or toxic substances from the project site; loss of 2.03 acres of wetlands under Coastal Commission jurisdiction	• **SOIL&WATER-1** requires a SWPPP to control runoff and prevent contamination. • **BIO-9** requires 2:1 habitat compensation for loss of approximately 2.03 acres of wetlands	Less than significant with implementation of conditions of certification
Noise: disturbance resulting in decreased productivity of special-status birds	• **BIO-8** requires pre-construction nest surveys and impact avoidance, and prohibits explosive demolition of the MGS during nesting season • **BIO-8** requires monitoring of special status bird nests within 0.25 mile of the project site • **NOISE-6** requires all equipment to have state-of-the-art silencing or buffering mechanisms • **NOISE-7** places restrictions on steam blows • **NOISE-8** restricts use of pile driving	Less than significant with implementation of conditions of certification
Lighting: disturbance resulting in altered behavior or increased predation	• **VIS-2** minimizes offsite lighting •	Less than significant with implementation of condition of certification
Dust: decreased plant productivity or nutritional quality	• **SOIL&WATER-1** prevents soil erosion • **AQ-SC3** requires measures to minimize fugitive dust • **AQ-SC4** requires construction monitoring and remediation in the event visible dust plumes are observed.	Less than significant with implementation of conditions of certification
Invasive weeds: threaten wetland restoration, destroy wildlife habitat and forage, increase soil erosion	• **BIO-7** controls invasive weeds.	Less than significant with implementation of condition of certification
OPERATION IMPACTS		

Impact	Condition of Certification	Significance Determination
Noise: disturbance resulting in mortality or decreased productivity of special-status birds and rehabilitating wildlife	**None**	Less than significant
Lighting: disturbance resulting in altered behavior or increased predation	• **VIS-3** minimizes offsite lighting.	Less than significant implementation of condition of certification
Avian collision and electrocution: injury or mortality	• **BIO-7** minimizes risk by complying with APLIC design standards.	Less than significant with implementation of condition of certification
Nitrogen deposition: degradation of habitat by enhancing invasive weeds	**None**	Less than significant

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 .

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 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 construction-related ground disturbance activities. No pre-construction site mobilization or construction related activities shall commence until a Designated Biologist has been approved by the CPM.

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 that may impact special-status species. 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. Inspect, or direct the site personnel how to inspect, 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 Reports (MCRs) and the Annual Compliance Report (ACR);

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 MCRs 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, and shall be present when biological resources are affected and the Designated Biologist is not onsite. 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(s), at least three references, and contact information of the proposed Biological Monitor(s) to the CPM for approval. Biological monitor(s) may assist but do not supplant, Designated Biologists, and are not required. The resume(s) 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 construction-related ground disturbance activities. The Designated Biologist shall submit a written statement to the 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 unpermitted adverse impact to any special-status biological resources (those that have significance under CEQA) 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 will be implemented 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 with biological resources conditions of certification or a halt of any site mobilization, ground disturbance, grading, construction, and operation activities with the potential to adversely impact any special-status biological resources. The project owner shall notify the CPM of the circumstances and actions being taken to resolve the problem, and shall respond to any CPM verbal or written requests for information within a timely manner.

WORKER ENVIRONMENTAL AWARENESS PROGRAM

BIO-5 The project owner shall develop and implement a project-specific Worker Environmental Awareness Program (WEAP). The WEAP shall be administered to all onsite personnel including surveyors, construction engineers, employees, contractors, contractor's employees, supervisors, inspectors, and subcontractors. 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 special-status biological resources on the project site and adjacent areas, explain the reasons for protecting these resources, and the function of flagging in designating special-status resources and authorized work areas;

3. Discuss federal and state laws protecting the special-status species and explain penalties for violation of applicable laws, ordinances, regulations, and standards (e.g., Endangered Species Act);

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; require 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 must approve the WEAP materials prior to their use. At least 10 days prior to site and related facilities mobilization, the project owner shall provide the CPM a copy of the CPM-approved final WEAP.

The project owner shall provide in the MCRs the number of persons who have completed the training in the prior month and a running total of all persons who have completed the training to date.

The WEAP shall be routinely administered within one week of arrival to any new construction personnel, foremen, contractors, subcontractors, and other personnel working at the project site. Upon completion of the orientation, employees shall sign a form stating that they attended the training and understand all protection measures. These forms shall be maintained by the project owner and shall be made available to the CPM upon request. Workers shall receive and be required to visibly display a hardhat sticker or certificate indicating that they have completed the required training.

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.

During project operation, the WEAP shall be repeated annually for permanent employees. 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

BIO-6 The project owner shall develop and implement a Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) and . The BRMIMP shall be prepared in consultation with the Designated Biologist 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 regulatory agency terms and conditions, such as those provided in the National Pollution Discharge Elimination System (NPDES) Construction Activities Stormwater General Permit;

4. a discussion of all special-status biological resources that could be impacted by project construction, operation, and closure;

5. a detailed description of measures that shall be taken to avoid or mitigate impacts on each special-status species potentially impacted by construction, demolition, and operation activities;

6. all locations on a map, at an approved scale, of special-status biological resource areas subject to disturbance and areas requiring temporary protection and avoidance during construction;

7. 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.

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

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

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

11. 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 submit the BRMIMP to the CPM for review and approval at least 45 days prior to start of any project-related ground disturbing activities.

If there are any permits that have not yet been received when the BRMIMP is first submitted, copies of these permits shall be submitted to the CPM within 5 days of their receipt, and a revised BRMIMP shall be submitted to the CPM for review within 10 days of receipt of permits by the project owner.

Implementation of BRMIMP measures shall be reported in the MCRs (e.g., 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 and which 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 special-status 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, Biological Monitor, and/or site personnel shall ensure that all potential wildlife pitfalls (trenches, bores, and other excavations) have been backfilled. If site personnel are inspecting trenches, bores, and other excavations and wildlife is trapped, they will immediately notify the Designated Biologist and/or Biological Monitor. 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) 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 northern 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. 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, site personnel 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.

7. 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 MCRs. For special-status species, the Designated Biologist or 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.

8. All vehicles and equipment shall be maintained in proper working condition to minimize the potential for spills of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials or wastes. The Designated Biologist shall be informed immediately of any spills of hazardous materials or wastes. Servicing of construction equipment shall take place only at a designated area. 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.

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

10. Standard best management practices (BMPs) from the project Storm Water Pollution Prevention Plan shall be implemented during all phases of the project (construction, demolition, operation, and decommissioning) where storm water run-off from the site could 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.

11. 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.

12. 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.

13. The project owner shall install silt fencing along the northern and southern perimeter of the project site. Silt fencing shall be inspected weekly or after significant rain events by the Designated Biologist or Biological Monitor, and shall be maintained in good condition, with no holes or gaps. If sedimentation occurs along the fence due to normal sand movement processes, the silt fencing may be removed, with permission from the CPM.

Verification: All general impact avoidance and minimization measures shall be included in the BRMIMP and implemented. Implementation of the measures shall be reported in the by the Designated Biologist in the MCRs. 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

BIO-8 Pre-construction nest surveys shall be conducted if construction or demolition 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 and substrate within the project site, and publically-accessible areas within 0.25-mile of the project boundary within potential western snowy plover and least tern nesting habitat.

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 14 days prior to initiation of construction activity. One survey needs to be conducted within the 3-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 on-site surveys, a no-disturbance buffer zone (protected area surrounding the nest) shall be established around each nest. For special-status species, if an active nest is identified, the size of each buffer zone shall be determined by the Designated Biologist in consultation with the CPM. Nest locations shall be mapped using GPS technology. Off-site special-status nests shall be mapped and monitored, but shall not be fenced.

4. If active nests of special-status species are detected during surveys, the Designated Biologist or Biological Monitor shall inform the CPM within one business day, and shall monitor all on-site and off-site nests 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 in coordination with the CPM. 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, where possible.

5. If active nests are detected during surveys, the Designated Biologist or Biological Monitor shall monitor the nest until he or she determines that nestlings have fledged and dispersed or the nest is no longer active. Buffer zones may be removed and monitoring may cease when the nest is deemed inactive by the DB or Biological Monitor.

6. Demolition and Pile Driving: explosive demolition of Mandalay Generating Station Units 1 and 2 and associated exhaust stack are to take place outside of nesting season (February 1 through August 31st). The project owner shall schedule the noisiest activities, such as pile driving, outside of breeding season to the extent possible.

Verification: The project owner shall provide notification to the CPM, CDFW, and USFWS at least 2 weeks prior to initiating surveys; notification will include the name and resume of the biologist(s) conducting the surveys and the timing of the surveys. Prior to the start of any pre-construction site mobilization, the project owner shall provide the CPM, CDFW, and USFWS a letter-report describing the findings of the preconstruction nest surveys, including the time, date, methods, and duration of the surveys; identity and qualifications of the surveyor(s); and a list of species observed. If active nests are detected during the surveys, the reports shall include a map or aerial photo identifying the location of the nest(s) and shall depict the boundaries of the proposed no-disturbance buffer zone around the nest(s). 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 MCRs by the Designated Biologist.

WETLAND IMPACT MITIGATION PLAN

BIO-9 The project owner shall fully mitigate for permanent impacts to on-site wetlands at a 2:1 ratio. The project owner shall provide funds to acquire mitigation land at an existing, or soon to be established, salt marsh or estuary habitat restoration project close to the site of impact as possible to fully mitigate impacts to Coastal Commission wetlands.

Mitigation shall occur using an established wetland restoration program or mitigation bank, with preference given to programs within the same watershed as the project (Santa Clara-Calleguas), or any other wetland restoration program approved by the CPM. The project owner shall provide a Wetland Compensation Plan (Plan). The Plan shall include:

a) A detailed review of existing physical, biological and hydrological conditions at the mitigation sites(s), including vegetation present, hydrologic regime of the site(s), known or expected fauna at the site(s), including any known or expected listed sensitive species, known or suspected contaminants that may be present at the site(s), and an analysis of existing ecological functions and values at the sites(s). The review shall also identify any known site constraints that may limit successful creation or restoration efforts.

b) A description of legal interests at the mitigation sites(s), and any landowner approval that the project owner may need to use the proposed site(s) for wetland creation or restoration.

c) Proposed goals, objectives and performance criteria for the proposed mitigation site(s) that identify specific creation or restoration measures to be implemented, including proposed habitat types to be created or restored, grading and planting plans, the timing of the mitigation measures, and monitoring that will be implemented to establish baseline conditions and to determine whether the sites are meeting performance criteria. Monitoring shall be for at least 5 years and final monitoring for success shall take place after at least 3 years with no remediation or maintenance other than weeding. The plan shall also identify contingency measures that the project owner will implement should any of the mitigation sites not meet performance criteria.

<u>These goals, objectives, and performance criteria shall include:</u>

i. Creation or restoration of habitat types that will support wetland-dependent species.

ii. Created or restored areas shall be provided a buffer of a size adequate to ensure protection of wetland functions and values, and at least 100 feet wide, as measured from the nearest upland edge of the transition area. The plan may propose a lesser buffer width if the mitigation area is sited within existing wetland areas that are protected by a buffer meeting these criteria.

iii. Measures to be implemented if soil or groundwater contamination is found at the site(s).

iv. A planting program that includes initial and ongoing removal of invasive or non-native species and identifies the vegetation species to be planted, local sources of those plants or seeds, measures needed to protect any existing native wetland vegetation species, timing of planting, plans for irrigation if needed to establish plants, and locations of plants. The plan shall also identify soil sources and amendments to be used.

v. Formal sampling design to assess performance criteria and shall identify the means by which success will be assessed. Where statistical tests are used, the plan shall include a requirement for a statistical power analysis to demonstrate that there will be sufficient replication to enable a robust test with beta equal to alpha.

d. Topographic drawings for the final mitigation site(s) and construction drawings, schedules, and a description of equipment to be used in the project.

e. "As-built" plans and annual monitoring reports for no less than five years or until the sites meet performance criteria.

f. Identify legal mechanism(s) proposed to ensure permanent protection of the mitigation site(s) – e.g. , conservation easements, deed restrictions, or other methods.

Verification: At least 90 days prior to the start of project construction, the project owner shall submit to the CPM for approval the wetland restoration program or mitigation bank the project owner wishes to participate in. At least 60 days prior to the start of project construction, the project owner shall provide funding to support an existing, or soon to be established, salt marsh or estuary habitat restoration project. At least 90 days prior to the start of project construction, the project owner shall submit to the CPM a Restoration Management Plan or similar plan (used by the land manager) that discusses the details of the wetland restoration program.

No less than 30 days prior to the start of project construction, the project owner shall provide a written verification to the CPM that the funding has been paid in full to the land manager approved by the CPM. The project owner shall provide evidence that payment from the funding can be used only to assist in coastal wetland restoration to mitigate the project's effects for the loss of Coastal Commission wetlands. Thereafter, within 30 days after each anniversary date of the commencement of project operation, the project owner shall obtain an annual report from the land manager administering the restoration program(s). The annual reports will document how payments from the endowment required hereunder was used and applied to provide wetland habitat restoration/enhancement at approved locations and shall describe how implementation of the mitigation conformed to the above goals, objectives, and performance criteria.

The project owner shall provide copies of such reports to the CPM within 30 days of receipt. This verification shall be provided annually for the operating life of the project.

If after five years, the restoration has not achieved the success criteria, the project owner shall submit within 90 days (of the fifth year anniversary) a revised or supplemental plan to compensate for those portions of the original plan which did not meet the approved success criteria.

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BIOLOGICAL RESOURCES-APPENDIX-1
NITROGEN DEPOSITION ANALYSIS

Wenjun Qian, Ph.D., P.E.

INTRODUCTION

The following provides a technical description of the nitrogen deposition analysis for the Puente Power Project (P3).

PROJECT DESCRIPTION

The proposed P3 would replace two aging gas-fired steam-generating units (Units 1 and 2) at the existing Mandalay Generating Station (MGS) with a new state-of-the-art General Electric Frame 7HA.01 natural gas-fired simple-cycle combustion turbine generator (CTG) and associated auxiliaries. In addition, the existing diesel emergency generator engine would be replaced with a new emergency engine, and the existing diesel emergency fire pump engine would be shut down. The existing 130 MW simple cycle Mandalay Unit 3 would remain online – with permitted emission limits equivalent to approximately 83 hours per year.

NITROGEN DEPOSITION

Nitrogen deposition is the term used to describe the input of reactive nitrogen species from the atmosphere to the biosphere. The pollutants that contribute to nitrogen deposition derive mainly from oxides of nitrogen (NOx) and ammonia (NH_3) emissions. NOx emissions (a term used for nitric oxide [NO] and nitrogen dioxide [NO_2]), generally the result of industrial or combustion processes, are much more widely distributed than NH_3. Reduced forms of nitrogen (NHx) are primarily emitted from intensive animal operations (e.g., dairies) and vehicles with the introduction of catalytic converters.

In the atmosphere NOx is transformed to a range of secondary pollutants, including nitric acid (HNO_3), nitrates (NO_3) and organic compounds, such as peroxyacetyle nitrate (PAN), while NH_3 is readily absorbed by surfaces such as water and soil as well as being rapidly transformed to ammonium (NH_4) by reaction with acidic compounds. Both the primary and secondary nitrogen-based pollutants may be removed by wet deposition (scavenging of gases and aerosols by precipitation) and by dry deposition (direct turbulent deposition of gases and aerosols) on the earth's surface.

NITROGEN DEPOSITION MODELS

The applicant provided nitrogen deposition modeling analysis in the Application for Certification (AFC [PPP 2015a]) and revised nitrogen deposition analysis in the data responses (PPP 2015z). The applicant used the American Meteorological Society/Environmental Protection Agency Regulatory Model known as AERMOD to evaluate the potential nitrogen deposition impacts of this power plant project. AERMOD is a steady-state Gaussian plume model that incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment

of both surface and elevated sources, and is applicable for use in both simple and complex terrain.

AERMOD is used for chemically inert pollutants and cannot account for transformation of the nitrogen species which are time and reaction dependent. When using AERMOD, the analysis must assume these transformations have already occurred at the exit of the stack. Therefore, it is a conservative model that overestimates transformation rates and deposition impacts. But, it is also approved for regulatory purposes for near-field impacts analyses (used by the Energy Commission and the air district), is most familiar to users and regulatory agencies, and it is generally used to estimate nitrogen deposition.

The applicant used several assumptions with regard to nitrogen formation and deposition, all of which tend to overestimate impacts. These assumptions include:

- One hundred percent conversion of oxides of nitrogen (NOx) and ammonia (NH_3) into atmospherically derived nitrogen (ADN) within the exhaust stacks rather than allowing the conversion of NOx and NH_3 to occur over distance and time within the plume and atmosphere, which is beyond the scope of AERMOD as noted above;

- Emissions rates based upon the proposed project's maximum potential to emit (with an estimated capacity factor of about 24.5 percent) as required by local air district rules, rather than annually averaged likely emissions based on previous equipment performance and expected actual operations. Staff does not expect a simple-cycle combustion turbine being installed as a peaking unit to operate more that 3 to 5 percent capacity factor on average; and

- Ammonia emissions are modeled at the permit level of 5 ppm. In reality, ammonia emissions are generally less than 1 ppm until near the end of the catalyst life. Plant operators have an extraordinary impetus to avoid exceedances of their NOx permit limits, because they can be fined. Owners keep their catalyst clean and active, which keeps NOx level low and limits unreacted ammonia in the exhaust. The permit would require the catalyst to be replaced or cleaned whenever the ammonia emissions exceed 5 ppm.

Assuming 100 percent of the NOx and NH_3 conversion to ADN within the exhaust stacks ignores the fact that the conversion process requires sunlight, moisture, and time. Since staff analyzes habitat areas within a 6 mile radius of the project, it is unlikely that there would be sufficient time for all of the emitted nitrogen to convert to ADN. Therefore, it is likely that a less than significant amount of the project's nitrogen emissions would actually deposit on these habitat areas. However, at this time staff does not have refined data on the amount of time needed for this conversion to occur. Therefore, staff has conservatively assumed total conversion at the stack for P3 and other power plant cases. The project would contribute to annual nitrogen deposition, but not at the levels predicted by AERMOD due to the limited time it takes for the plumes to travel to the habitat areas and the conservative assumptions used for nitrogen formation and deposition.

For average meteorological conditions, it would take the P3 plumes less than an hour to

reach the furthest habitat of interest. However, in urban atmospheres, the oxidation rate of NOx to nitric acid (HNO_3) is approximately 20 percent per hour, with a range of 10 to 30 percent per hour (ARB 1986). Nighttime NOx oxidation rates are generally much lower than typical daytime rates. HNO_3 is readily taken up by soil, vegetation, and water surfaces. HNO_3 also reacts with gaseous NH_3 to form ammonium nitrate (NH_4NO_3), but the reaction is reversible and dependent on temperature, relative humidity, and concentrations of other pollutants. The ambient concentration of nitrate is limited by the availability of NH_3 which is preferentially scavenged by sulfate (Scire et al 2000).

On the other hand, because NH_3 is readily taken up by damp soils and vegetation and by water bodies, a significant portion of the emitted NH_3 can be deposited to vegetation depending on the type of land cover and on meteorological conditions (Hatfield and Follett 2008). NH_3 is also readily taken up by aerosol particles of sulfuric acid (H_2SO_4) to form ammonium sulfate ($(NH_4)_2SO_4$ [Metcalfe et al 1999]). But since most $(NH_4)_2SO_4$ particles deposit to ground by rain (wet deposition), it is likely that less than a significant amount of the $(NH_4)_2SO_4$ particles would actually deposit on the habitat areas within the 6 mile radius of the project (since the average rainfall in the city of Ventura is only about 17.5 inches per year). Instead, the $(NH_4)_2SO_4$ particles may travel hundreds or even thousands of miles away from the project before they deposit on the earth's surface.

The Energy Commission's 2007 report *Assessment of Nitrogen Deposition: Modeling and Habitat Assessment* (Tonnesen et al 2007) reviewed two other air dispersion models which can represent chemically reactive emissions and formation and deposition of aerosols: CALPUFF and the Community Multiscale Air Quality (CMAQ) model. The CMAQ version used in the Tonnesen report sometimes produced relatively large numerical errors. Thus, the report concluded that CMAQ cannot be used reliably for single point source impact simulations.

CALPUFF is a non-steady-state Lagrangian Gaussian puff dispersion model that simulates the effects of time- and space-varying meteorological conditions on pollution transport, transformation, and removal. It does so by modeling parcels of air as they move along their trajectories. Different from AERMOD, CALPUFF uses simplified chemistry to attempt to represent nitrogen partitioning and transformation with relatively low computational cost compared to CMAQ. The Tonnesen report concluded that the CALPUFF model can be used to simulate nitrogen deposition, and its results were generally similar in magnitude to the CMAQ-simulated nitrogen deposition. However, CALPUFF is more appropriate for long-range transport (i.e., greater than 50 kilometers – at less than 50 km, and for complex terrain, it requires regulatory approval for its use by the relevant reviewing agency). In addition, CALPUFF allows users to define certain parameters in its meteorological processor, which makes it difficult to be standardized for regulatory review purposes at the current time.

Both AERMOD and CALPUFF have strengths and weaknesses in modeling nitrogen deposition as mentioned above. Based on staff's modeling experience and U.S. Fish and Wildlife Service's analysis on the Russell City Energy Center Project (USFWS 2010), nitrogen deposition rates at habitat areas within 6 miles of the project predicted from CALPUFF are usually an order of magnitude lower (i.e., $1/10^{th}$) than those from AERMOD. At this time, staff continues to believe AERMOD, with the overlay of

conservative assumptions mentioned above, is the most conservative model to use for nitrogen deposition modeling.

However, staff does not agree with the applicant's approach on how to account for the net benefit from the discontinuation of operating the MGS Units 1 and 2. The applicant calculated the net increase of nitrogen emissions by subtracting the baseline nitrogen emissions of MGS Units 1 and 2 from the proposed nitrogen emissions for the new P3 gas turbine. The applicant modeled the net increase of nitrogen emissions assuming they are emitted from the new P3 gas turbine exhaust stack. Staff does not believe the applicant's approach is appropriate due to the following reasons:

- The exhaust stack parameters of the new P3 gas turbine would be different than those of the stack for MGS Units 1 and 2 boilers. The plume rise, dispersion process and maximum impacts locations would be different from the new P3 gas turbine than those from the MGS Units 1 and 2 boilers. The reduction in nitrogen deposition impacts due to the shutdown of MGS Units 1 and 2 would not be determined correctly assuming they were emitted from the new P3 gas turbine stack.

- The applicant used the most recent 5-year averaged nitrogen emissions of MGS Units 1 and 2 as the baseline for nitrogen emissions of these units. However, at their current capacity factors (less than 6 percent in recent 5-years [CEC 2016]), MGS Units 1 and 2 produce only a fraction of the maximum annual nitrogen emissions that the proposed project would be permitted to produce. But the comparison of past actual emissions to future permitted emissions is another conservative assumption, as it is unlikely that P3 would ever approach its permitted level of operation as California moves to a high renewable, low carbon (greenhouse gas or GHG) electricity generation system.

Based on the above mentioned reasons, staff finds it difficult to determine the baseline nitrogen deposition impacts from MGS Units 1 and 2. Staff revised the nitrogen deposition modeling to analyze the impacts from P3 only (the proposed new gas turbine and new emergency engine), without accounting for the net benefit from the discontinuation of operating the MGS Units 1 and 2. **Appendix Bio-1Table Ndep-1** shows the emission rates of NOx and NH_3 from the P3 new units staff used to model nitrogen deposition impacts.

Appendix Bio-1Table Ndep-1
P3, Modeled Nitrogen Species Emissions (tons per year [tpy]) [a]

Source	NOx	NH_3	Depositional Nitrogen from NOx	Depositional Nitrogen from NH_3	Total Depositional Nitrogen
New turbine	32.14	18.41	9.78	15.16	24.94
New emergency engine	0.09	NA	0.03	NA	0.03
Total	32.23	18.41	9.81	15.16	24.97

Source: PPP 2015z, Table C-2.11 and Energy Commission staff analysis
Note: [a] Nitrogen emissions are calculated based on the ratios between the molecular weight of nitrogen (14), the molecular weight of NOx as NO_2 (46), and molecular weight of NH_3 (17).

NITROGEN DEPOSITION IMPACTS

Staff used AERMOD with the assumptions mentioned above to conservatively estimate nitrogen deposition incremental impacts from P3. Staff's analysis covers the habitat areas within the 6 mile radius from the project.

As discussed above, staff's nitrogen deposition analysis does not account for the net benefit from discontinued operation of MGS Units 1 and 2. Staff-modeled nitrogen deposition impacts of P3 new units would be about 10 percent higher than those modeled by the applicant. The applicant showed that the modeled nitrogen deposition impacts from the net increase of nitrogen emissions at P3 would be less than 2.8 percent of the critical loads of the habitat areas identified by the applicant within 6 mile radius of the project site (PPP 2015z). Without accounting for the net benefit from the discontinued operation of MGS Units 1 and 2, staff's analysis shows that the nitrogen deposition impacts from P3 would be about 3 percent or less of the critical loads.

Staff emphasizes that its modeling provides an overestimation of nitrogen deposition of the project, based on conservatisms layered upon conservatisms. However, it is the best tool we currently have that is accepted to provide a consistent, albeit extremely conservative result.

The conservatively modeled project nitrogen deposition impact could be added to the baseline nitrogen deposition (see more descriptions regarding baseline below) to compute the total nitrogen deposition rates on habitat areas. The results could be used to assess the extent of affected habitat to include areas where the total nitrogen deposition exceeds the critical load for each vegetation type. Staff considers that vegetation types below critical load are not significantly impacted by the project (see more details in the **Biological Resources** section).

California and Ventura County Air Pollution Control District Baseline Nitrogen Deposition

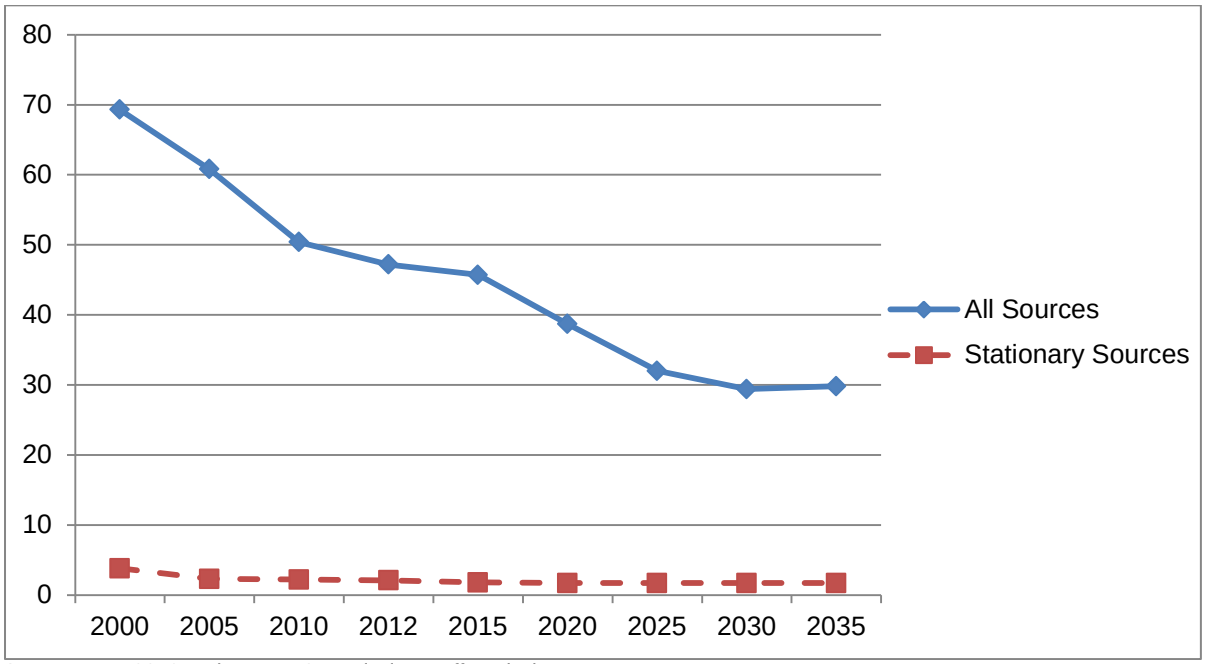
The Energy Commission's 2007 report (Tonnesen et al 2007) provides a baseline total nitrogen deposition on a 4-km (2.5-mile) grid (4 km x 4 km, or 16 km^2) throughout California. The report used emission inventory data that were previously developed through the Western Regional Air Partnership (WRAP) to simulate annual air quality and visibility for calendar year 2002. The source categories included for the calendar

year 2002 include: area sources, point sources, mobile sources, non-road mobile sources, road dust, off shore sources, Mexico emissions inventory, and biogenic emissions for Volatile Organic Compounds (VOC).

However, the U.S. EPA's enforcement efforts, implemented through the State Implementation Plan (SIP) enforced by the regional air district's Air Quality Management Plan (AQMP, see more details in the **Air Quality** section), have significantly reduced nitrogen emissions from mobile and stationary sources sectors since 2002, and these downward trends are expected to continue. **Appendix Bio-1 Figures Ndep-1** shows that both the actual and forecasted NOx emissions for all sources (blue solid line) in Ventura County APCD have decreased significantly and will continue to decrease from year 2000 to year 2035. Staff was not able to find the NH_3 emissions trends for the Ventura County APCD.

The emissions from stationary sources, including electric generation facilities, are also presented (red dashed line) in **Appendix Bio-1 Figures Ndep-1** for comparison. NOx emissions from the stationary sources only account for about 4 to 6 percent of those from all sources and show a minor decrease over the years. The majority of the NOx emissions come from mobile sources.

Appendix Bio-1 Figure Ndep-1
NOx Emissions Trends in Ventura County APCD (tons/day, annual average)

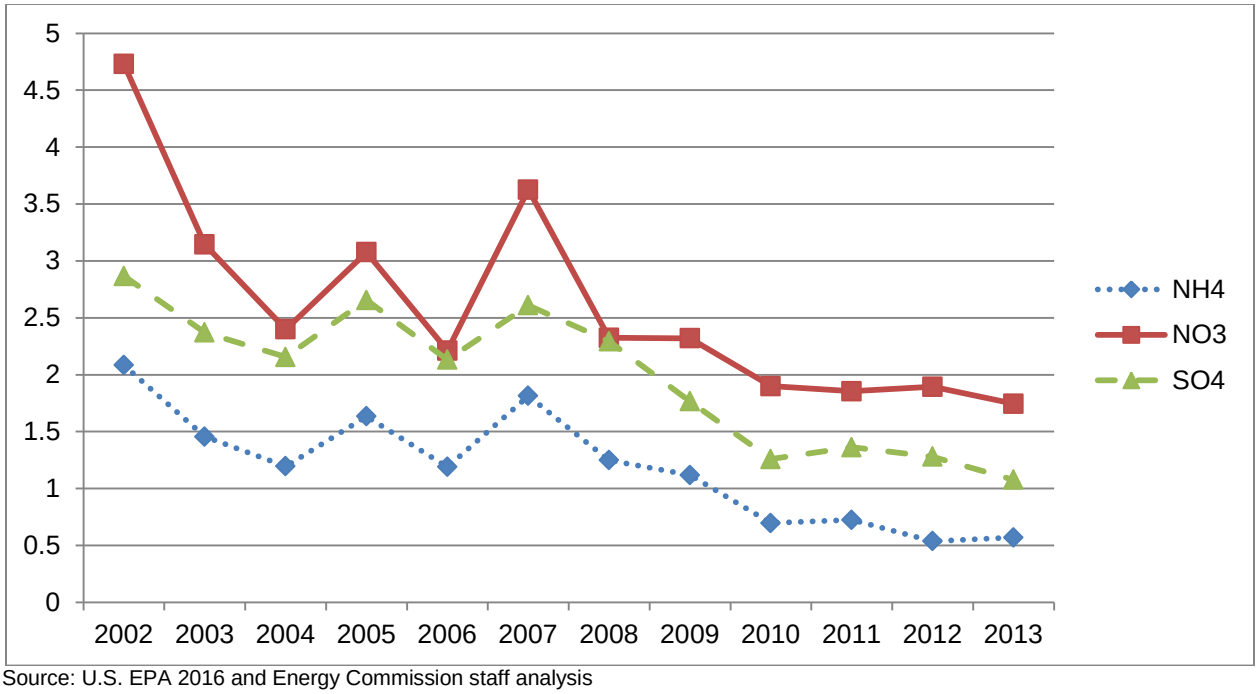


Source: ARB 2013 and Energy Commission staff analysis

Appendix Bio-1 Figures Ndep-2 shows measured annual averaged ammonium (NH_4), nitrates (NO_3) and sulfates (SO_4) concentrations of dry particles at the Simi Valley monitoring station (about 32.5 miles east-northeast of P3) from the U.S. EPA PM2.5 Chemical Speciation Network (CSN [U.S. EPA 2016]). This is representative of depositional particles in ambient air at the station. The ammonium concentrations (NH_4) have decreased more than 70 percent from 2002 to 2013. The nitrates (NO_3) and sulfates (SO_4) concentrations have decreased more than 60 percent each from 2002 to

2013. This indicates that the reductions in the NOx emissions shown in **Appendix Bio-1 Figures Ndep-1** are effective in reducing the background nitrogen-containing particles in the Ventura County APCD. The reduction in ammonium concentrations also proves that there has been a decrease in NH_3 emission inventory.

Appendix Bio-1 Figure Ndep-2
Ammonium (NH_4), Nitrates (NO_3) and Sulfates (SO_4) Concentrations ($\mu g/m^3$)
Measured at Simi Valley Monitoring Station



Source: U.S. EPA 2016 and Energy Commission staff analysis

Considering the decreasing NOx emission inventory trend (an overall reduction of about 30 percent from 2002 [interpolated from 2000 and 2005 data] to 2015 for all sources), the relatively small contribution from the stationary sources, and the decreasing ammonium, nitrates and sulfates concentration measurements, the use of 2002 emissions inventory in the baseline nitrogen deposition rates probably overestimates baseline deposition by a factor of 1.4 or more. Unfortunately, the 2007 Tonnesen work for the 2002 model year has not been updated and there are not more recent background data to use.

Staff assumes that total nitrogen loading is directly proportional to NOx and ammonia inventories. Since deposition pathways are complex and dependent on components such as time, humidity, sunlight exposure, and uniform mixing of needed reactants, deposition rates at the habitat areas near the project may be reduced more than the percentage change to nitrogen inventories (as shown in **Appendix Bio-1 Figures Ndep-2**).

In addition, Energy Commission staff's position since the year 2000 for CEQA mitigation has been that all nonattainment pollutant and precursor emissions emitted from a proposed facility must be reduced by a ratio of at least one-to-one. The project area is designated as nonattainment for both the federal and state ozone standards and the

state PM10 standards. NOx is a precursor for both ozone and PM10. Staff is recommending that P3 be required to offset its annual NOx emission increase in a 1-to-1 offset ratio. As a result, P3 would not result in a net increase in NOx emissions basin wide (see details in the **Air Quality** section). Therefore, the baseline nitrogen from NOx would not change due to NOx emissions from P3.

CONCLUSIONS

Staff believes that because AERMOD does not account for the transformation of the nitrogen species, which is time and reaction dependent, the nitrogen deposition impacts of the project have been overestimated by as much as a factor of 10 using AERMOD. Using emission rates based on the proposed project's maximum potential to emit, as required for air quality permitting, could overestimate the impacts of the proposed simple-cycle peaking unit at P3 by a factor of 5 to 8. Further, the NOx emission inventory in the Ventura County APCD has decreased about 30 percent from 2002 to 2015. The use of the 2002 emissions inventory in the baseline nitrogen deposition rates probably overestimates baseline nitrogen deposition by a factor of 1.4 or more. In addition, P3 is required to offset its annual NOx emissions on a 1-to-1 offset ratio. P3 would not result in a net increase in NOx emissions in the Ventura County APCD. Lastly, since staff modeled ammonia emissions at their maximum permitted level, they were modeled at a rate 5 times higher than what is reasonably expected.

While staff can calculate a nitrogen deposition rate from the project, staff believes the modeling tools and background deposition rates identify a much higher rate of nitrogen deposition than is reasonably expected to occur. For more information on this, refer to the **Biological Resources** section of this document.

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BIOLOGICAL RESOURCES APPENDIX-2

ID #	*Project Title*	*Description*	*Location*
1	Las Cortes	Planned Residential Group (PRG) for up to 301 affordable housing units, 4 manager's units, parks, streets and sidewalks, landscaping and community buildings	Near Colonia Park
2	Fire Station No. 8, Located at 3000 South Rose Ave	New 13,036 sq. ft. fire station, a 15,960 sq. ft. training yard, and site improvements; zone change to Community Reserve (C-R); zone text amendment to permit fire stations in C-R zone, and additional height with a special use permit; and a lot line adjustment for 3 parcels.	3000 S. Rose Ave. Oxnard, CA 93033
3	Teal Club Specific Plan	990 residential units of varying density, single-family, townhomes, condominium, and apartment units; 21 ac. community park; 8 ac. school site; 60,000 s.f. mixed use and retail; 132,000 s.f. business research park; 1 ac. fire station site.	Large undeveloped area on the south east corner of Doris Ave. and N. Patterson Rd
4	Amoretti	Construction of a 27,760 sq ft industrial building and lot merger to combine two lots into one	1551 Pacific Ave. Oxnard, CA 93033
5	Pacific Water Conditioning	Construction of a single story 25,158 sq ft warehouse building.	2040 Eastman Ave. Oxnard, CA 93033
6*	Gill's Onions Plant Expansion	Construct 3 buildings; demolish 13,059 square feet; associated site improvements consisting of parking, stormwater and street improvements for existing food processing and manufacturing facility operating within a 13.72-acre site.	1051 S Pacific Ave. Oxnard, CA 93033
7	St. Paul Baptist Church	18,000 square foot sanctuary with 788 seats for St. Paul Baptist Church	1777 Statham Blvd. Oxnard, CA 93033

8	Channel Islands Business Center	Construct 90,414 square foot speculative industrial building.	1425 Mariner Drive Oxnard, CA 93033
9*	Industrial Condominium Conversion	Conversion of 36,480 sf warehouse into 3 industrial condominium units.	2311 Statham Pkwy. Oxnard, CA 93033
10	Saint John the Baptist Coptic Church	Construct a 1-story church facility on a vacant 35,000 sf lot.	1200 Pacific Ave. Oxnard, CA 93033
11	Special Use Permit & Zone Variance	Construct employee parking lot, trash enclosure, and lunch area within a 15,630 sf undeveloped site	931 Richmond Ave. Oxnard, CA 93033
12*	Chemical Building	Construction of building to hold 2 chemical tanks to treat desalted water.	251 S Hayes Ave. Oxnard, CA 93033
13*	Rincon Recycling	Convert warehouse to recycling facility.	720 Pacific Ave. Oxnard, CA 93033
14	Lion's Gate Annex	Self-storage & RV storage.	2751 Statham Blvd. Oxnard, CA 93033
15	Daly Project: Channel Islands	72 attached apartments (15% affordable)	E. Channel Islands Blvd & Statham Blvd. Oxnard, CA 93033
16	Skyview Apartment Complex	240-unit affordable (100% affordable) housing apartment (AAHOP-Project)	1250 S. Oxnard Blvd Oxnard, CA 93030
17	Coastal Apartment Homes and Coastal Senior/Assisted Living	Construction of approximately 101 apartments and 70 unit senior living units. 14-500-04 (SUP); 14-580-01 (ZTA); 14-570-02 (ZC); 14-310-05 (LLA); 14-570-02 (Cultural)	North corner of Butler Rd and E. Pleasant Valley Rd.

18	Vista Pacifica	Multi-family condominium complex with 40 units in 5 buildings with community park. 14-300-03(Special Use Permit and Density Bonus); 14-300-004 (Tentative Tract Map)	5527 Saviers Rd Oxnard, CA 93033
19	Wagon Wheel Development Project (PA18)	Construction of 219 market rate apartments (1, 2 & 3 bedrooms), recreation/meeting room, tot lot, and landscaped paseos and 16,303 sf. Of commercial	Area between Wagon Wheel Rd. and Winchester Drive
20	Terraza de Las Cortes	Four 16-unit multifamily buildings with a total of 64 affordable apartments, and one 1,080 sq.ft. community building, parking and landscaping on a 3.56 acre site.	Carmelita Ct. Oxnard, CA 93033
21*	The Lofts Affordable Senior Apartments	Conversion of existing 52,000 sf industrial building into 115 affordable senior apartments.	300 W. Ninth St Oxnard, CA 93033
22	Avalon Homes Subdivision	Coastal Development Permit for 64 single-family homes, and a tentative tract map for 16 parcels (4 houses per parcel) on a 8.1-acre property.	On the bend of Catamaran Street
23	RiverPark: Tempo Apartments	235 apartments (3 story buildings) with garages & recreation facilities. SE corner Moonlight Park Avl & Forest Park Bl. Also APN 1320110095	443 Forest Park Blvd., Oxnard, CA 93036
24	RiverPark: Sonata Apartments	53 apartments (3 story buildings) with garages & recreation facilities. NW corner of RiverPark Blvd and Danvers Rivers Drive	2905 Danvers River St. Oxnard, CA 93036
25	Anacapa Townhomes	Coastal Development Permit for 70 condominiums in 5 buildings on a 3.5 acre property, and variance for setbacks. Northeast corner of Harbor Blvd & Wooley Rd.	5001 W. Wooley Rd. Oxnard, CA 93033
26	Ventura/Vineyard Homes	Proposed project to construct 152 residential dwelling units.	North corner of Riverpark Blvd. and E. Vineyard Ave
27	The District (Morning View) RiverPark Dist H-4	113 detached single family homes. (South of Tiber Way at N. Oxnard Blvd.)	Tiber River Way Oxnard, CA

			93033
28	Veranda RiverPark Dist H-3	95 detached single family homes. (NEC of Owens River Dr. & Albion Dr.)	Owens River Dr. Oxnard, CA 93033
29	The Axis (Sienna) RiverPark Dist H-5	91 detached single family homes. (N. of Tiber River Way at N. Oxnard Blvd.)	Tiber River Way Oxnard, CA 93033
30	Westerly II RiverPark Dist H-2	69 single family detached homes; Oxnard Blvd., N. of Nile River Dr.	Nile River Dr. Oxnard, CA 93033
31	Victoria/Hemlock	116 condominium dwelling units.	1830 S Victoria Av Oxnard, CA 93033
32	Oxnard Shores Mobile Home Park Expansion	Modification of existing condition of approval to allow for the development of three new mobile home sites.	5540 W. Fifth St. Oxnard, CA 93033
33	Beachwalk on the Mandalay Coast (formerly North Shore Subdivision)	183 single-family homes, 109 detached condos, and on-site amenities. Northeast corner of W. Fifth St. & Harbor Blvd.	Northeast corner of W. Fifth St. & Harbor Blvd.
34	J Street Drain Project	As Lead Agency, the Ventura County Watershed Protection District (District) prepared an environmental impact report for the J Street Drain Project (referred to herein as the "approved project"). The District proposed to increase the flow capacity of the existing J Street Drain to accommodate runoff from a 100-year storm event, thereby reducing potential flooding of residential and commercial areas in the cities of Oxnard and Port Hueneme. The Ventura County Board of Supervisors certified the J Street Drain EIR and approved the J Street Drain Project on March 27, 2012. The EIR Addendum was prepared to determine whether the proposed modified project would result in new or substantially more severe significant environmental impacts compared with the impacts	J St and Redwood Avenue to south of Hueneme Road, Oxnard and Port Hueneme

		disclosed in the certified EIR. The proposed modified project would result in minor changes to the approved project's design for Reaches 2, 3 and 4. Instead of an open channel, the proposed modified project would feature buried box culverts that would allow for landscaping on top. Similar to the approved project, the channel would remain open in Reach 1 from the south side of Hueneme Road south to Ormond Beach Lagoon to avoid impacts to endangered species in the lagoon.	
35	Santa Clara River Levee Improvements Downstream of Union Pacific Railroad (SCR-3) Project	The project would implement structural improvements to the existing SCR-3 levee to allow for FEMA certification. Between Bailard Landfill and N. Ventura Rd. (reaches 1-3) two options and considered. Option 1A (Full Levee System) adds fill material and riprap to raise the existing levee (8,875 feet) with one tie-in to Bailard Landfill. Option 1B (Minimum Levee System) adds fill material along a portion of the existing levee (3,575 feet), with tie-ins to Bailard, Coastal, and Santa Clara Landfills. The existing River Ridge Golf Course swale would be filled in. Between N. Ventura Rd. and the UPRR bridge (Reach 4), a 950-foot long floodwall would be constructed on the river side of the road with a visible height of 6 feet; a flood gate would be installed across N. Ventura Rd. and then a 4- to 6-foot floodwall would be constructed on the south side of N. Ventura Rd. for 860 feet.	N Ventura Rd., North of W. Vineyard Ave.
36	North Pleasant Valley (NPV) Treatment Facility	Note: Reference SCH# 200841159 / Recirculation Construction and operation of a groundwater treatment facility, including the drilling and production of two new wells, installation of pipelines necessary for distribution of raw well	Las Posas Road/Lewis Road, Camarillo

		water, product water and brine. The proposed facility would provide treated water to the City's existing service area, with an average design capacity of 7,500 acre feet year of production water. Treatment would include filtration, reverse osmosis and disinfection. Brine generated by treatment would be discharged to the Calleguas Regional Salinity Management Pipeline, located along Lewis Road.	
37	East Area 1 Specific Plan Amendment	The Project includes amendments to the East Area 1 Specific Plan, consisting of refinements to the land use plan; an amended and restated Development Agreement; and a Master Vesting Tentative Map ("MVTM") to subdivide the Project Site. The Project implements the City's General Plan. The Project includes 501 acres that would provide for up to: (1) 1,500 residential dwelling units, (2) 240,000 square feet of commercial and light industrial uses, (3) 9.2 acres of civic uses for school facilities, and 225.3 acres of open space and park uses on the 501 acre site. Ordinance No. 1255 approving this project was introduced for first reading on February 17, 2015. The second reading and adoption occurred on March 16, 2015.	Telegraph Road and Padre Lane, Santa Paula
38	Tentative Subdivision Map for Tract 5745 for Approved Village Specific Plan	FYI Final Tentative Subdivision Map for Tract No. 5745 is a request to subdivide The Village Specific Plan area in substantial conformance with the previously adopted specific plan by creating 17 numbered lots and 19 lettered lots for development, public improvements, and open space.	Oxnard Boulevard, Wagon Wheel Road, Oxnard

39	The Grove Specific Plan	Project consists of a Specific Plan and a Vesting Tentative Tract Map that would enable the future development of a residential neighborhood ranging between 200 and 250 dwellings on approx. 26.51 acres (a density of 9.43 per units per acre) bounded by the Thille Community Neighborhood, on the south by Telephone Road and Copland Drive, and ont he west by the La Posada mobile home park, and farther to the west by the 101/126 highway interchange. The property is currently within unincorporated area, but is within the City of Ventura's Sphere of Interest, and is designated on the General Plan as Medium Density Residential; 9-20 du/ac.	Thille Street, Copland Drive, Ventura
40	Santa Barbara County Reliability Project	Note: 1 HC Southern California Edison Company (SCE, or the applicant) proposes to construct the Santa Barbara County Reliability Project (proposed project) between the City of Ventura, in Ventura County, and the City of Carpinteria, in Santa Barbara County.	City of Ventura, Ventura County to City of Carpenteria, Santa Barbara County
41	Moorpark Newbury 66 kV Subtransmission Line Project	Southern California Edison (SCE) proposes to construct a new 66 kV subtransmission line an related facilities within a portion of SCE's existing Moorpark-Ormond Beach 220 kV Transmission Line right-of-way (ROW) and a portion of SCE's Moorpark-Newbury-Pharmacy 66 kV Subtransmission Line ROW. The new subtransmission line would be constructed between SCE's Moorpark Substation and Newbury Substation and includes construction of 1,200 ft. of underground line, 5 miles of new 66 kV line, 2 miles of new 66 kV line within the Moorpark-Newbury-Pharmacy 66 kV subtransmission line, and 1 mile of the new 66 kV subtransmission line	E Los Angeles Ave & W Los Angeles Ave. & Gabbert Rd. Moorpark, CA 93021

		into Newbury Substation.	
42*	Ventura Harbor Marina and Yacht Yard Expansion	The project involves expansion and improvements of the existing Ventura Harbor Marina and Yacht Yard to increase the number of boat slips from 40 to 80 (40 new boat slips). The proposed expansion involves removing the existing dock structure, concrete ramps, a portion of the existing pier, and fuel docks; construction of an expanded dock structure; relocation of the fuel dock; onshore parking improvements; and other related facility improvements. The expanded dock would extend further into the main channel of Ventura Harbor as compared to the existing dock, but would be consistent with the channel limit considered by the Ventura Port District Commission in June 2014. The proposed parking improvements would require removal of several mature palm trees and other landscape elements.	Anchors Way Drive / Beachmont Street, Oxnard
43	RiverPark Senior	Develop a 166,000 square-foot, 136-unit senior living facility	SE Corner of Ventura Rd. & Clyde River Dr.
44	5th Banquet Hall	Convert an existing office building into a 6,210 sq. ft. banquet room with approximately 5,717 sq. ft. of related support facilities (kitchen, restroom, lobby etc…), of which, approximately 2,288 square feet is new floor area.	141 W. Fifth St.
45	Starbucks with Drive Thru	Construct a single-story Starbucks coffee shop with a drive thru on a 20,603 square foot lot (after lot merger)	1921 N. Rose Ave.

46	"RiverPark Retail"	Construct a single-story, multi-tenant commercial building featuring a drive thru anticipated for WSS Shoe Warehouse and Krispy Kreme Doughnuts.	Riverpark Bl and Vineyard Ave.
47	The Container Store	Construct a single-story, 25,000 square-foot commercial building within The Collection at RiverPark Shopping Center	450 Town Center Drive
48	Pacifica Senior Living at East Village	Convert existing 57-room hotel to 80 Assisted Living and Memory Care senior living facility. Add 10,392 sf: Memory Care wing, 3,556 sf: Assisted Living addition, and 2,020 sf kitchen/dining area addition. Site is 2.26 ac and existing building with proposed addition is 54,073 sf.	2211 East Gonzales Rd.
49	Gold Coast Maintenance Facility	Construction of an operations and maintenance facility: construct a 49,533 square foot facility - 17,935 sf office building; a 24,330 sqft maintenance building; a 2,105 sf fuel service station with fueling bays; and a 5,163 sf. wash building. The project includes outdoor parking for 125 buses along with landscaping and parking improvements to serve employees and visitors.	Northwest corner of Auto Center Drive and Paseo Mercado
50	Surf Thru Carwash	Drive thru car wash with 3,831 s.f. car wash building, 591 s.f. pay building, self-service vaccum stations on 1.57 acre lot.	1971 N. Oxnard Blvd.
51	Trinity Plaza	A 7,400 sf church on a 43,136 square foot proposed parcel. A 2,999 sf fast food (Carl's Jr) restaurant with drive thru on 31,768 sf proposed parcel; and 6,100 sf multi-tenant retail building on 26,094 sf proposed parcel.	1800 Camino Del Sol, 450 N. Rose Ave.
52	Retail building	New one-story 11,400 square foot retail building	105 W. Pleasant Valley Rd.
53	Rancho Victoria Plaza Shopping Center	Major modification to revise the site plan and architecture for an approved shopping center, and a revision to the approved tentative subdivision map to create and accommodate 11 commercial	3600 & 3700 W. Fifth St.

		buildings on 11 separate parcels.	
54*	Redevelopment of the Food 4 Less Site (former Target site)	Redevelopment of the 14.47 acre Food 4 Less site, including the demolition of the former Target building, constructing of a new building to be occupied by Food 4 Less, a fuel station associated with Food 4 Less, rehabilitation of the existing on-site buildings, and 2 new retail buildings, for a net building area of 159,954 square feet. Also PZ Nos. 12-300-01 (Map), 12-500-01 (gas station), 12-500-02 (drive-thru), 12-510-01 (off-site alcohol)	150 W. Esplanade Dr.
55	Oralia's Bakery	Construct 1825 sq.ft. addition to existing bakery, landscaping, site improvements. Also APN 2030042210	942 W. Wooley Rd., Oxnard
56	Oxnard Crossroads	2 new commercial buildings. Project has been approved by Planning Commission.	481-491 Ventura Blvd., Oxnard
57	Buildings 1100A and B The Collection at RiverPark	40,000 square-foot, single-story, multi-tenant commercial within The Collection at RiverPark Shopping Center	601-691 Collection Boulevard, Oxnard
58	Emerald Professional Bldg.	2-Story Commercial Building. Veterinarian & General Office NWC Saviers Rd & Hueneme Rd.	5587 Saviers Rd.
59	Paseo Azteca	Multi-tenant Retail Building with 10 Spaces.	618 South A. St., Oxnard
60	Third Tower	Esplanade Financial Square. Proposed 15-story office tower. Approx. 300,000 sf.	E. Esplanade Drive, Oxnard
61	HOLIDAY INN EXPRESS & SUITES HOTEL PROJ-7630	40-room addition to existing Holiday Inn Express & Suites Hotel, 3 stories (23,961 s.f.).	1080 NAVIGATO, Ventura
62	SONDERMANN-RING - AMENDMENT PROJ-6237	300 Apartment Units & 20,292 s.f. Commercial Retail; private indoor and outdoor recreational facilities including a 2.44-acre park and waterfront promenade, 3 stories.	Ventura Harbor adjacent to Anchors Way & Navigator Drive,

			Ventura
63	MARRIOTT-RESIDENCE INN PROJ-5616	New Hotel - 128 Rooms (87,000 s.f.), 4 stories.	770 S. Seaward Ave., Ventura
64	ISLAND VIEW APARTMENTS - WESTWOOD COMMUNITIES PROJ-2008	154 Apartments, 4 stories.	Alameda at 8th St. behind Montalvo Square, Ventura
65	BROOME (THE GROVE) PROJ-00723	198-250 townhouse, apartment, courtyard, stacked units, 2.5 stories.	Vacant land between Copland & Telephone Rd., between the 126 and 101 Freeways, Ventura
66	ANASTASI DEV. PROJ-00756	Mixed Use: 138 Condominiums & 20,230 s.f. Commercial, 3 stories.	Southwest corner of Seaward Ave. and Harbor Blvd., Ventura
67	THE BLUFFS @ VISTA DEL MAR (Triangle) - Paul Sheeh	Luxury apartment community w/clubhouse; park & open space areas; bluff-top public promenade.	Triangle Site - Ash St @ Front St, Ventura
68*	BEST WESTERN - 708 E Thompson Bl - Remodel PROJ-6702	Remodel 2 existing motel rooms into a gym and meeting room and replace the 2 rooms within a new 2nd story addition. (555 s.f.).	708 E. Thompson Blvd., Ventura
69	398 S ASH ST - TRAILER HOTEL PROJ-7213	New airstream trailer park (34 units)	398 S. Ash St., Ventura
70	HILTON - Harbor & Figueroa - Formal Submittal PROJ-8165	160 Room Hotel; 5,242 s.f. Retail; 5,337 s.f. Restaurant; Upper Roof Lounge (covered area only) 1,555 s.f.; (156,160 s.f. total), 4 stories.	SEC Harbor & Figueroa, Ventura
71	VENTURA DOWNTOWN HOUSING PROJ-5085	255 Apartments, 5 stories.	120 E. Santa Clara St., Ventura

72	SANTA CLARA COURTS (DALY) - 72 W SANTA CLARA ST - PROJ-7290	24 Condominium Units	72 W Santa Clara St, Ventura
73*	CMH - new hospital	New hospital building adaptive reuse of existing hospital (121,000 s.f). for non-essential hospital support services & (104,000 s.f.) for new backfill medical office reuse, new street extensions & new public plaza (320,000 s.f. -new; 230 beds)	South of Loma Vista Road, west of Brent Street and north of Main Street, Ventura
74	CMH parking structure	5-1/2 Story Parking Structure w/571 Parking Spaces and 1,399 s.f. Retail Liner	City Parking Lot North of 29 North Brent Street and south of new Community Memorial Hospital building, Ventura
75	1570 E THOMPSON BL - THOMPSON VILLAGE - CDRC- PROJ-7910	26 unit multi-family residential	1570 E. Thompson Blvd., Ventura
76	WESTSIDE RENAISSANCE (formerly Centex) PROJ-04154	120 Single Family Residence, 36 Condominiums, 3 stories.	2686 N. Ventura Av, Ventura
77	WESTSIDE RENAISSANCE - DYER SHEEHAN PROJ-4677	50 Affordable Senior Apartments	2686 N. Ventura Avenue, Ventura
78	LOGUE (Revision to Project-1200) PROJ-7125	Mixed Use: 125 Condominium Units & 7,300 s.f. Commercial	2055 N. Ventura Av, Ventura
79	WESTVIEW VILLAGE - Housing Authority - Formal-PROJ-7951	Redevelopment of 180 public housing apartments and the addition of 140 new apartments.	Between Barnett and Vince and riverside and Snow Streets, Ventura
80	RIVERSIDE APARTMENTS - 691 RIVERSIDE ST - PROJ-7529	24-Unit Apartment, 2 stories.	691 Riverside St., Ventura

81	Olivas Park Drive Extension Project	Extension of Olivas Park Drive as a four-lane Secondary Arterial between Golf Course Drive and Auto Center Drive; (2) a levee/floodwall that is approximately 5,400 linear feet in length along the north side of the Santa Clara River that terminates 350 feet south of the Southern Pacific Railroad; (3) General Plan amendments for land use changes for parcels within the 110.83139-acre project boundary, (4) a Specific Plan amendment to revise the boundaries of the Auto Center Specific Plan; and (5) zone changes for amendment to revise the boundaries of the Auto Center Specific Plan; and (5) zone changes for parcels within the project boundaries. The proposed project also includes a pre-zone and annexation of one County parcel. The proposed zoning and land use amendments could accommodate a maximum of 1,258,000 square feet of commercial development and 75,000 square feet of industrial development. The proposed roadway extension will transition to join the existing improvements at the Johnson Drive/U.S. 101 southbound ramps interchange. No improvements other than the transition are proposed as part of this project at the Johnson Drive/U.S. 101 interchange. Additionally, the Montalvo Community Services District (MCSD) would abandon and remove the existing wastewater treatment plant components of the MCSD, and the wastewater treated at this facility would be diverted to the City's wastewater facility.	Between Golf Course Drive and Johnson Drive, Ventura
82	FPA LAND DEV/VICTORIA CORP C- PROJ-03617	7 industrial office buildings, 1 story.	NEC of Victoria Ave. & Olivas Park Dr., Ventura

83	GOLF COURSE SELF STORAGE PROJ-8647	NEW SELF STORAGE FACILITY	GOLF Course Dr. and Leland St., Ventura
84	6424 AUTO CENTER DR - HOFER - KIA ADDITION - PROJ-8641	KIA SHOWROOM 3,382 SQUARE FOOT ADDITION AND BUILDING REMODEL	6424 Auto Center DR., Ventura
85	RAVELLO HOLDINGS - NORTHBANK & JOHNSON - PROJ-6811	Mixed Use: 306 Apartment Units & 10,000 s.f. Commercial, 5 stories.	Johnson Drive at Northbank Drive, Ventura
86	SILVER BAY FOODS - TRANSPORT & WALTER - PROJ-7318	New fish processing building (62000 s.f.), 2 stories.	Transport St., Ventura
87	4 Way Meat Market #2 CA	C-2 New Office (2,039 s.f.) 23' 10"(2.00)	724 N. Ventura Ave., Ventura
88	Bruton Industries Group Inc	C-2 2-story office building (6,400 s.f.) 28'(2.00)	4107 E. Main St., Ventura
89	Global Building	C-2 4 new commercial buildings - (3,000 s.f.) 075-0-224-035	S. Mills Rd., Ventura
90	UNION BANK - MILLS & MAIN PROJ	C-1A New Bank (4860 s.f.) 36' 7"(1.00)	NEC Mills and Main St., Ventura
91	VALERO PROJ-4627 Steve Bovee Drafting 1975 Maricopa Highway #11	CTO Automatic carwash and canopy (912 s.f.)	2121 Harbor Blvd., Ventura
92	KAISER - NWC MARKET & VALENTINE - Formal PROJ-8479 Kaiser Foundation Health Plan	MPD 72,000 SQ.FT. Medical Center	NWC Market St. & Valentine Rd., Ventura
93	162 W PARK ROW AV-CDRC PROJ-7920 Randall Hromadik	T4.2 3 new apartment units	162 W Park Row Ave., Ventura
94	CITRUS II - VINCE DALY PROJ-7772	80-unit apartment	South Side of Citrus/East of Wells Rd., Ventura
95	3114 TELEGRAPH RD - VENTURA OPTHALMOLOGY	CPD 10,313 square foot medical opthalmology building	3114 Telegraph Rd., Ventura
96	11101 CARLOS STREET - VINCE DALY PROJ-7771	47-unit apartment	11101 Carlos St., Ventura

97	255 W STANLEY AV	CPD 10,200 SF industrial building	255 W. Stanley Ave., Ventura
98*	VENTURA BOTANICAL GARDENS PROJ-5810	Botanical Gardens and support facilities within Grant Park	Grant Park, Ventura
99	MAR-Y-CEL - FORMAL - (Previously PROJ-00823)	Mixed Use: 138 Units & 6,142 s.f. 138 0 Commercial	NEC Thompson Blvd. and Ventura, Ventura
100	Ventura Cannery Apartments	Mixed Use: 78 Condos & 2,156 s.f. 78 0 Commercial	130 N. Garden St. , Ventura
101	WESTSIDE VILLAS - 1350 & 1490	C-2 Mixed Use: 35 Condominium Units, 5 40 0 Live/Work Units & 1,573 s.f. Commercial	N Ventura Ave., Ventura
102	DARLING APARTMENTS	Mixed Use: 43 Apartment & 2 45 2 Live/Work Units	Darling & Wells, Ventura
103	Project: V2V VENTURES - PALM & SANTA CLARA	Mixed Use: 34 Condominium Units & 6,175 s.f. Commercial	300 E. SANTA CLARA, Ventura
104	2200 E MAIN ST - ANASTASI (ASBELL) - (Previously PROJ-04543) PROJ-7323	Mixed Use: 26 Condominium Units & 3,896 s.f. Commercial	2200 E. Main St., Ventura
105	Project: CAFE SCOOP - STAJEN PROJ-00687	Mixed Use: 10 Condominium Units & 5,554 s.f. Commercial	2170 E. Main St., Ventura
106	11101 CARLOS ST - GISLER RANCH MIXED USE - DALY PROJ-8428	3-story mixed use consisting of 43 apartments & 1200 s.f. retail	11101 Carlos St, Ventura
107	NEW URBAN VENTURES PROJ-04182	Mixed Use: 80 Condominium Units & 1,779 s.f. Commercial	1995 N. Ventura Ave., Ventura
108	PALM & POLI ASSOC PROJ-03676	Mixed Use: 16 Condominium Units & 1,200 s.f. Commercial	Southwest corner of Palm and Poli St., Ventura
109	ANACAPA COURTS - Formal PROJ-8105	Mixed use: 25 Condominium Units & 4,250 s.f. Retail	299 E. Main St. (Palm & Main), Ventura

110	WORLD OIL - 1571 E MAIN ST - FORMAL PROJ-6018	Mixed Use: 3 Apartment Units & 2,438 s.f. Commercial	1571 E Main St, Ventura
111	HEARTHSIDE - JENVEN VILLAGE SP AMENDMENT Village SP AMEND; TRACT NO. 5801 PROJ-1857	51Condominium Units	Southeast of Well Road and Darling Rd., Ventura
112	8324 TELEGRAPH RD - VOELKER PROPERTY PROJ-8150	18 Single Family Homes	8324 Telegraph Rd., Ventura
113	PARKLANDS APARTMENTS PROJ-4222	173 Apartments with Community Building	Southwest corner of Telegraph & Wells Rd., Ventura
114	SANTA CLARA APTS - 1254 & 1263 E SANTA CLARA ST PROJ-6263	8 Apartments	1254 & 1268 E. Santa Clara St., Ventura
115	WESTWOOD/PARKLANDS PROJ-03829	216 detached homes; 110 attached homes	Southwest corner of Wells and Telegraph Rd., Ventura
116	HEMLOCK APARTMENTS PROJ-1126	23 Apartments	264/274 S. Hemlock St., Ventura
117	MATLIJA INVESTMENT GROUP - 11 S ASH PROJ-04315	15 Condominiums	11 S. Ash St., Ventura
118	CITRUS DR - CITRUS II - DALY PROJ-8427	78-unit 3-story apartment building	11156-1172 Citrus Drive, Ventura
119	REXFORD PROJ-03198	25 Condominiums	918 E. Thompson, Ventura
120	CASTILLO DEL SOL - 3005 E MAIN ST - HOUSING AUTHORITY PROJ-6187	40 affordable housing units for special needs residents, on-site manager's unit and supportive services	3005 E. Main St., Ventura
121	THE FARM - UC HANSEN TR SP - WH VENTURA - SEC TELEGRAPH & SATICOY PROJ-8446	UC Hansen SP (The Farm); 131 single family homes and 34 townhomes, 2 parks and 3 miniparks. SEE PROJ-03826 for affordable component of this project.	Southeast corner of Telegraph Rd. and Saticoy Ave., Ventura

122	LA BARRANCA -5533 FOOTHILL RD PROJ-6098	9 Single Family Residences	5533 Foothill Rd, Ventura
123	SANJON VILLAGE - 1230 E THOMPSON BL - FORMAL PROJ-7224	34 Condominium Units	SWC of Thompson Blvd. & Sanjon Rd., Ventura
124	CHAPMAN, MIKE PROJ-04691	7 Apartments approved (duplex constructed, 5 additional units pending construction)	95 E. Ramona St, Ventura
125	ENCLAVE AT NORTHBANK - WATT COMMUNITIES PROJ-4184	A Vesting Tentative Map for the subdivision of 12.61 acres into 84 residential lots, and two (2) open space lots and Design Review and Density Bonus Concessions for the development of 91 residential units consisting of 84 single-family units and seven (7) duplexes and adjacent park space located on a vacant site south of North Bank Drive approximately 100 feet east of South Saticoy Avenue; Watt Communities, LLC, applicant; zoned T4.10, Urban General and Parks and Open Space. The project includes Addendum #1 (EIR- 5-12-10586) to the Saticoy and Wells Community Plan and Code FEIR (EIR-2473)	SWC Saticoy Ave. & Northbank Dr., Ventura
126	GOLDBERG PROJ-04296	5 Condominiums	1837 E. Thompson Blvd., Ventura
127	RAVEN RIDGE - 117 N Ventura Av PROJ-8101	30 Condominiums	117 N. Ventura Ave., Ventura
128	HUGHES PROJ-04590	3 Condominiums	1511 Vista Del Mar Dr., Ventura
129	MATILIJA PROJ-03865	28 Condominiums	221 N. Garden St., Ventura
130	CITY VENTURES - ORCHARD COLLECTION - CITRUS PLACE PROJ-6355	59 Single Family 60 Townhomes	Citrus & Peach, Ventura
131	UC HANSEN TRUST SP PROJ-03826	SEE PROJ-8446 for Market Rate Units in this Specific Plan; 24	Southeast corner

		farmworker apartments	Saticoy and Telegraph, Ventura
132	NORTHBANK - VINCE DALY PROJ-6270	117 Single Family 31 Affordable for sale triplex/quadplex 50 apartments	Eastern terminus of North Bank Drive, Ventura
133	EAST VILLAGE RESIDENTIAL - CEDC PROJ-4154	50 Low Income Apartments	Snapdragon & Los Angeles Ave., Ventura

*Project was excluded from final analysis due to lack of potential impacts to biological resources

CULTURAL RESOURCES

Melissa Mourkas and Matthew Braun[1]

SUMMARY OF CONCLUSIONS

Staff concludes that the proposed Puente Power Project (P3) could result in significant, direct impacts to 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 the event that archaeological resources are found buried beneath the project site during construction-related ground disturbance.

Staff's analysis of the proposed P3 with regard to ethnographic and historical built environment resources concludes that no ethnographic or historical built environment resources are present in the project areas of analysis and therefore no ethnographic or historical built environment resources would be impacted by the construction or operation of the project.

Staff has considered environmental justice populations in its analysis of the project. Staff has not identified any Native American environmental justice populations that either reside within 6 miles of the project or that rely on any subsistence resources that could be impacted by P3.

INTRODUCTION

This cultural resources assessment identifies the potential impacts of the proposed project on cultural resources. Three broad classes of cultural resources are considered in this assessment: prehistoric, ethnographic, and historic. Those cultural resources determined eligible to the California Register of Historical Resources (CRHR) are called historical resources and are further defined under state law as buildings, sites, structures, objects, areas, places, records, manuscripts, and tribal cultural resources (Cal. Code Regs., tit. 14, §§ 4852a, 5064.5(a)(3); Pub. Resources Code, §§ 5020.1(h, j), 5024.1[e][2, 4], 21074).

Prehistoric archaeological resources are those materials relating to prehistoric human occupation and use of a particular environment. These resources may include sites and deposits, structures, artifacts, rock art, trails, and other traces of Native American human activity. 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,

[1] Mourkas – Historic built environment resources; Braun – Prehistoric and ethnographic resources.

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]

Tribal cultural resources are a category of resources recently introduced into CEQA by Assembly Bill 52. Tribal cultural resource are resources that are any of the following: sites, features, places, cultural landscapes, sacred places, or objects that are included in or determined eligible to the CRHR, or are included on a local register of historical resources as defined in Subdivision K of section 5020.1 of the Public Resources Code. Tribal cultural resources can be prehistoric, ethnographic or historic as defined above.

Historic-period resources are those materials, archaeological and architectural, usually but not necessarily 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, trail and road corridors, artifacts, or other evidence of historic human activity. Under federal and state requirements, historical cultural resources must be greater than 50 years old to be considered of potential historic importance. A resource less than 50 years of age may be historically important if the resource is of exceptional importance. 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.

For the proposed P3, 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, an analysis of those cultural resources that staff recommends for eligibility to the CRHR and that therefore qualify as historical resources, and an analysis of the potential impacts on potential historical resources from the proposed project using criteria from CEQA. The primary analysis objective 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 historical resources are identified, staff determines whether there may be a project-related impact to them. If the historical resources cannot be avoided, staff recommends mitigation measures that ensure that impacts to the identified historical resources are reduced to a less-than-significant level.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Projects proposed before the Energy Commission are reviewed to ensure that the proposed facilities would comply with all applicable laws, ordinances, regulations, and standards (LORS) (Pub. Resources Code, §25525; Cal. Code Regs., tit. 20, 1744[b]).

[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.

See **Cultural Resources Table 1** for a summary of cultural resources LORS applicable to the project.

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

Applicable LORS	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 Descendants (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	§5097.99 prohibits the acquisition, possession, sale, or dissection with malice or wantonness of Native American remains or artifacts taken from a Native American grave or cairn.
Health and Safety Code, §7050.5	This code prohibits the disturbance or removal of 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.
PRC, Division 20. California Coastal Act. Chapter 3, Article 5, Section 30244	Requires reasonable mitigation for projects that would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer (SHPO).
Local	
County of Ventura General Plan September 22, 2015	Section 1.8: Paleontological and Cultural Resources. Establishes goals and policies for managing cultural resources within the county's jurisdiction.
City of Oxnard General Plan 2030 October 2011	Goal ER-11: Identification, protection, and enhancement of the city's archaeological, historical, and paleontological resources.
City of Oxnard Code Chapter 37, Section 37-3.6.0 Cultural Resources and Development	This section provides standards to avoid or minimize impacts to cultural resources in the coastal zone. Ordinance No. 2034, pt.1, 2-12-85.

SETTING

Information regarding the setting of the proposed project places the project in regional geographical and geological contexts. 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 P3 would be located in western Ventura County, in coastal Oxnard, California (AECOM 2015c: Figure 1). As discussed in the application for certification (AFC), the proposed project site is located on the westernmost edge of the Oxnard Plain in the Ventura Basin, adjacent to the Pacific Ocean (AECOM 2015a: 3-1; Schoenherr 1992:3). The Ventura Basin is situated at the western portion of the Transverse Ranges geomorphic province, and is bounded by the Santa Ynez and Big Pine faults on the north, on the northeast and east by the San Andreas Fault, and on the south by the Santa Monica-Malibu fault system (Keller 1995:1). The proposed P3 would be situated in the southwestern portion of this basin. The Ventura Basin receives the bulk of its runoff and sediment from the Santa Clara River, with smaller amounts of sediment from the creeks emanating from the Santa Rosa Hills and Santa Monica Mountains (AECOM 2015a: 3-1). The Ventura Basin is an alluvial plain that contains thick, unconsolidated Holocene[3]-aged alluvial deposits which overlay basement rocks of varying age (AECOM 2015a: 3-1).

PROJECT, SITE, AND VICINITY DESCRIPTION

The proposed project site is located in the coastal city of Oxnard. The project site is bordered on the north by the Santa Clara Estuary Natural Preserve and McGrath Lake, within the McGrath State Beach; on the east by North Harbor Boulevard and agricultural fields; on the south by Mandalay State Park; and on the west by the Pacific Ocean (AECOM 2015a: Figure 1). Current land use designations in the proposed project vicinity include residential and industrial development, wetland preserves, parklands and open space, and agriculture (AECOM 2015a: 2-3).

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, are 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 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. The AFC cultural resources section summarizes the regional paleoenvironment (AECOM 2015c: 3-1 – 3-3). An overview is provided here for the reader, with a more detailed environmental setting in **Cultural Resources Appendix CR-1**; staff adds site-specific information below.

[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. 2013). The term “B.P.” (Before Present) is an international dating convention that refers to the year 1950 as the present.

Overview

The proposed project site is situated at an elevation of 14 feet mean lower low water on Santa Clara River alluvial deposits and eolian sediments.

The modern climate of the project vicinity is influenced by the adjacent open coastline. Consequently, the local weather conditions are typically mild, with warm summers and cool winters. Precipitation is concentrated during the winter months, but summer showers do occur occasionally when onshore circulation patterns become established (AECOM 2015a: 4.3-1).

Geologically, the project site is situated on a coastal alluvial plain, with soils consisting of sand and silty sand sediments, with some inter-bedded sandy silt and clay. The deposits are defined as Qe, or Active Coastal Eolian Deposits, and are of Holocene age (AECOM 2015a: 4.8-5). Because the deposits are of Holocene age, they are of the same time period that humans are known to be present on the California coast, suggesting that the deposits have the potential to contain cultural resources.

The archaeologist for the applicant identified sediments of an unknown depth in the portion of the project area designated for construction of the gas turbine, that consist of dredged material from previous work in the Edison Canal. Understanding the geomorphology of an area explains how and when the underlying soils and sediments at the amended project area developed, and is discussed in more detail in **Cultural Resources Appendix CR-1**.

The natural habitats most closely associated with the P3 project area, and that would have been available to prehistoric Native Americans, are the dune habitats and scattered alkali meadows among the dunes. There are six primary vegetation communities that were present during prehistoric times, Arroyo Willow Thickets, California Bulrush Marsh, California Sagebrush Scrub, Dune Mats, Mock Heather Scrub, and Mule Fat Thickets. A host of plants and animals that were sought for food and other material cultural needs lived in these habitats and are detailed more fully in **Cultural Resources Appendix CR-1**.

Prehistoric Setting

The regional archaeological prehistory for the Oxnard region presented by Wallace (1955) and Warren (1968), and supplemented by Glassow et al. (2007:191-213) are most applicable to the project area. This sequence identifies four periods/horizons, Horizon I – Early Man/San Dieguito Tradition (ca. 12,000-8,000 B.P.); Horizon II – Millingstone Period/Encinitas (8,000-5,000 B.P.); Horizon III – Intermediate/Campbell Tradition (5,000- 1,500 B.P.); Horizon IV – Late Prehistoric (ca. 1,500 B.P. - Historic Contact). The periods are primarily separated on the basis of differences in material culture through time, e.g., projectile point technologies, use or non-use of various food-processing materials, burial practices, or ceramics. The various traditions/complexes identified within these periods are discussed in more detail in **Cultural Resources Appendix CR-1**.

Ethnographic Setting

The P3 is located in the coastal portion of Chumash mainland territory. Alfred Kroeber (1976: Plate 48) provides a map of ethnographic village and camp locations. There are no mapped Chumash settlements in the immediate P3 project area. However, about 2 miles north of the project at the mouth of the Santa Clara River, Kroeber locates the ethnographic village of *Ishwa*, and near Port Hueneme, about 4 miles south of the project, Kroeber locates the ethnographic village of *Wene'me.* Near Point Mugu, about 11 miles south of the project, Kroeber identified 3 additional villages, *Muwu, Simo'mo,* and *Wihachet* (Kroeber 1976: Plate 48). McLendon and Johnson (1999: Figure 3.1) provide a map of Chumash towns at the time of European settlement that differs slightly from Kroeber's map. It appears, at least at contact, there was no evidence of a village at the mouth of the Santa Clara River, or the village Kroeber identified as *Wene'me.* However, McLendon and Johnson do identify *Muwu* in the same location, but do not mention *Simo'mo* or *Wihachet*. This map also shows a village about 5 miles inland from the P3 project area, *Kasunalmu*; but Mclendon and Johnson provide no further information about this site. More detailed ethnographic information is included in **Cultural Resources Appendix CR-1**.

Contemporary Tribal Entities with Cultural Affiliations

There are three Chumash tribal entities culturally affiliated with the project area. One of these groups, the Santa Ynez Tribe, is federally recognized. The other two groups are not federally recognized; however, the Energy Commission consults with all tribes on the list provided by the Native American Heritage Commission (NAHC), regardless of recognition status. The NAHC letter to staff (Sanchez 2015) identified the tribal entities listed below and further described in **Cultural Resources Appendix CR-1**.

Tribe	Cultural Affiliation
Santa Ynez Band of Chumash Indians	Chumash
Coastal Band of Chumash Nation	Chumash
Barbareño/Ventureño Band of Mission Indians	Chumash

Historic Setting

The historic period in the vicinity of the project site can be separated into three major periods, the Spanish Period (1769–1822), the Mexican Period (1822–1848), and the American Period (1848–Present). During the Spanish Period, the first significant Euro-American settlement in the area began with the Mission San Buenaventura, founded by Junipero Serra in 1782. The Mexican Period was characterized by land grants and ranchos awarded by Mexican Governor Juan Bautista Alvarado, leading to cattle ranching and dry farming. Another notable event in the history of the area included the Oxnard Brothers' sugar beet processing facility (ca. 1897-1898) developed in Oxnard to serve the sugar beet farming in the surrounding area. Agriculture played a substantial role in the development of the Oxnard Plain and the names of other prominent agricultural families, such as the McGrath family, are memorialized in place names such as McGrath State Beach. Agriculture drove the development of railroads and ports in the region to transport goods to other markets. The city of Oxnard was incorporated in

1903 and is now Ventura County's largest city. More detailed historic period information is included in **Cultural Resources Appendix CR-1**.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHODS AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

Regulatory Context

California Environmental Quality Act

Various laws apply to the evaluation and treatment of cultural resources. CEQA requires the Energy Commission to evaluate cultural resources by determining whether they meet several sets of specified criteria that would make such resources eligible to the CRHR. Those cultural resources eligible to the CRHR are called historical resources. The evaluations then influence the analysis of potential impacts to the historical 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." (Cal. Code Regs., tit. 14, §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 similar to the eligibility criteria for the NRHP. In addition to being at least 50 years old, a resource must meet at least one (and may meet more than one) of the following four criteria (Pub. Resources Code, §5024.1):

- 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 an important creative individual, 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 (Cal. Code Regs., tit. 14, §4852[c]).

Even if a resource is not listed or determined to be eligible for listing in the CRHR, CEQA allows the lead agency to make a determination as to whether the resource is a historical resource as defined in Public Resources Code, sections, 5020.1(j) or 5024.1.

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 (Cal. Code Regs., tit. 14, §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 environment (CEQA defines historical resources to be a part of the environment), staff analyzes the 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 historical resource(s) affected;
- the specific historical significances of any potentially impacted historical resource(s);
- how any historical resource(s) significance is manifested physically and perceptually;
- appraisals of those aspects of any historical resource's integrity that figure importantly in the manifestation of the resource's historical significance; and
- how much the impact will change historical resource integrity appraisals.

Title 14, California Code of Regulations, section 15064.5(b), the State 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."

California Native American Tribes, Lead Agency Tribal Consultation Responsibilities, and Tribal Cultural Resources

Assembly Bill 52 (AB 52) amended CEQA to define California Native American tribes, lead agency responsibilities to consult with California Native American tribes, and tribal cultural resources. "California Native American tribe" means a "Native American tribe located in California that is on the contact list maintained by the Native American Heritage Commission [NAHC] for the purposes of Chapter 905 of the Statutes of 2004"

(Pub. Resources Code, § 21073). Lead agencies implementing CEQA are responsible to conduct tribal consultation with California Native American tribes about tribal cultural resources within specific time frames, observant of tribal confidentiality, and if tribal cultural resources could be impacted by project implementation, are to exhaust the consultation to points of agreement or termination.

Tribal cultural resources are either of the following:

1. Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
    a. Included or determined to be eligible for inclusion in the CRHR.
    b. Included in a local register of historical resources as defined in the Public Resources Code, section 5020.1(k).
2. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in the Public Resources Code, section 5024.1(c). In applying the aforesaid criteria, the lead agency shall consider the significance of the resource to a California Native American tribe. (Pub. Resources Code, § 21074[a].)

A cultural landscape that meets the criteria of Public Resources Code, section 21074(a), is a tribal cultural resource to the extent that the landscape is geographically defined in terms of its size and scope (Pub. Resources Code, § 21074[b]).

Historical resources, unique archaeological resources, and non-unique archaeological resources, as defined at Public Resources Code, sections 21084.1, 21083.2(g), and 21083.2(h) may also be a tribal cultural resource if they conform to the criteria of Public Resources Code, section 21074(a), two paragraphs above.

This document, therefore, assesses the proposed project's impacts on historical resources, unique archaeological resources, and tribal cultural resources.

AB 52 also amended CEQA to state that a project with an impact that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment (Pub. Resources Code, § 21084.2).

HISTORICAL RESOURCES INVENTORY

The development of an inventory of historical resources in and near the proposed project area is the requisite first step in the assessment of whether the project might, under Public Resources Code, section 21084.1, cause a substantial adverse change in the significance of a historical resource, and could therefore have a significant effect on the environment. The effort to develop the inventory involved conducting a sequence of investigations that included 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 known cultural resources are historically significant. This section discusses the methods and the results of each inventory phase, develops the cultural resources inventory for the analysis of the

proposed project, and interprets the inventory to assess how well it represents the potential for the PAA to contain cultural resources.

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 historical resources can be immediate, further removed in time, or cumulative. Impacts may be physical, visual, auditory, or olfactory in character. The resultant PAAs may be contiguous, dis-contiguous or overlapping. PAAs 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 dis-contiguous areas where the project could potentially affect cultural resources.

Staff defines the prehistoric PAA as comprising (a) the proposed project site and a one-mile radius (**Cultural Resources Figure 1)**. The built-environment (architectural) study area is defined as the area within a half-mile radius around the proposed project site (**Cultural Resources Figure 2)**.

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 can be more encompassing, including viewsheds that contribute to the historical significance of such historical resources. The NAHC assists project-specific cultural resources consultants and agency staff in identifying these resources, and consultation with Native Americans and other ethnic or community groups may contribute to defining the area of analysis.

The area of analysis used by staff to identify ethnographic resources included the area from the Santa Clara River south to Port Hueneme, and inland as far as the eastern edge of the city of Oxnard. The basis for this area of analysis is information provided by King (1990: 91) and Glassow et al. (2007: 209), which suggests that Chumash groups lived in large, dense residential settlements near the coast, and utilized smaller camps based on seasonal needs.

Background Research

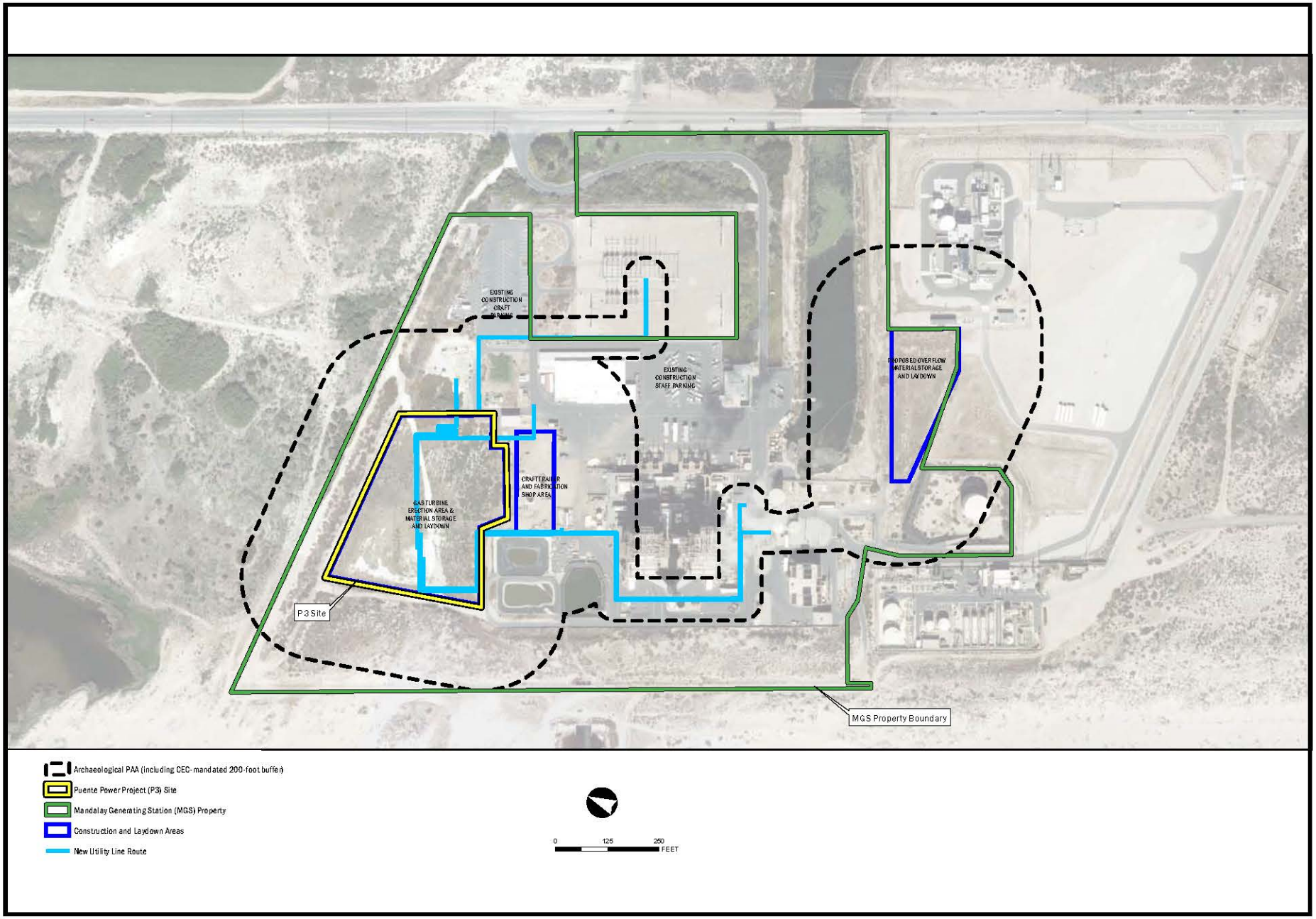
The background research for the present analysis employs information that the project applicant and Energy Commission staff gathered from literature and record searches, research, site visits and information that staff obtained as a result of consultation with other entities. The purpose of the background 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 is conducted 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

CULTURAL RESOURCES - FIGURE 1

Puente Power Project (P3) - Archaeological Project Area of Analysis.

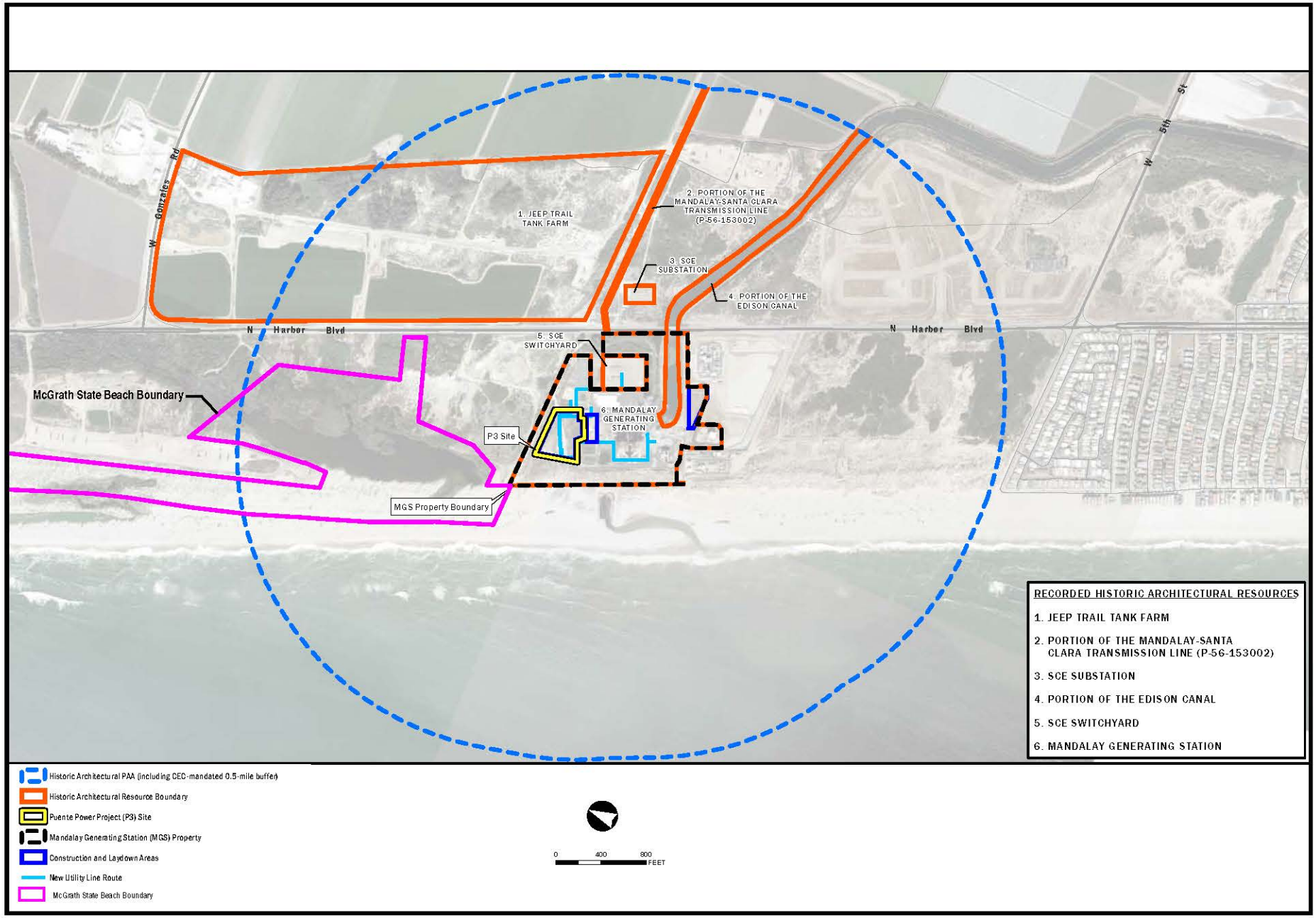


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SOURCE: AFC Figure 4.3-1

CULTURAL RESOURCES - FIGURE 2

Puente Power Project (P3) - Historic Built Environment Resources in the Project Area of Analysis.



CULTURAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 4.3-8 ad NRG

Resources Information System (CHRIS) located at California State University, Fullerton, California.

Staff also examined ethnographic sources concerning the Chumash and nearby Native American groups to ascertain any pertinent information regarding potential ethnographic resources in the PAA. Staff also examined prehistoric and historic literature to supplement their analysis.

Staff reviewed planning documents and materials provided by California Department of Parks and Recreation (Parks) staff and others. Staff also reviewed historical accounts and planning materials on file at the Oxnard Public Library.

Methods and Results

AECOM, the cultural resources consultant to the applicant, requested a records search from the SCCIC for the proposed P3. The records search covered the proposed project site and a one-mile radius surrounding it. The records search conducted by SCCIC staff on January 5, 2015, included ethnographic and historic literature and maps; federal, state and local inventories of historic properties; archaeological base maps and site records; and survey reports on file at the SCCIC. AECOM also conducted subsequent archival research as shown below (AECOM 2015a: p 4.3-7 to 4.3-8; AECOM 2015c: p 3-1 to 3-2):

- NRHP listings and determinations of eligibility
- CRHR listings and determinations of eligibility
- Historic Property Data Records
- Known/recorded archaeological sites and associated Primary Forms
- Bibliography of all reports, surveys, excavations, inventories, and studies
- Historic maps
- Historic addresses
- California Points of Historical interest
- California Historical Landmarks
- California Office of Historic Preservation (OHP) Directory of Historic Properties – Records entered into the OHP computer file of historic resources, received quarterly
- California State Library
- California Historical Society
- Civil Engineering Corps/Seabee Historical Foundation
- City of Oxnard Planning Division
- City of Oxnard Building and Engineering Services
- County of Ventura Building and Safety Department
- County of Ventura Assessor’s Office

- Department of the Navy, Naval Base Ventura County
- Five Views: An Ethnic Sites Survey for California (1988)
- Heritage Square Oxnard
- Historical Society of Southern California
- Huntington Library, Southern California Edison (SCE) Records
- Museum of Heritage Foundation
- Oxnard Historic District
- Oxnard College Learning Library Resource Center
- Port Hueneme Historical Society Museum
- Port Hueneme and the Friends of the Bard Mansion
- SCE Archives
- Ventura County Library

The literature review and records search indicate that 19 previous cultural resource studies have been conducted in the records search area; of these, 15 cultural resource studies have been conducted within the PAA. The records search revealed that there were no previously identified cultural resources on the P3 or Mandalay Generating Station (MGS) property. Additionally, a total of 5 cultural resources have been previously recorded in the records search area (see **Cultural Resources Table 2**). Tables detailing the entire literature review results are included in **Cultural Resources Appendix CR-1.**

Cultural Resources Table 2
Literature Review Results: Previously Recorded Cultural Resources in the Puente Power Project Area of Analysis

Resource Identifier	Site Components	Date Recorded/Updated	NRHP/CRHR Eligibility	Location relative to P3
P-56-000667/CA-VEN-000667	Shell lenses and artifacts eroding from sand dunes; Unconfirmed reports of burial	1979/1997 update	Not evaluated	Approximately 0.3 miles southeast
P-56-001234/CA-VEN-001234	Unsubstantiated Chumash ethnographic *Juncus* spp. collection area	1979	Not evaluated	Approximately 0.2 miles southeast
P-56-001807/CA-VEN-001807	2 lithic flakes, 1 piece of groundstone, 1ceramic sherd with red slip, 2 pieces of glass insulator fragments	2010	Not evaluated	Less than 0.1 miles east
P-56-153002	Transmission tower built in 1958	2010	Recommended not eligible	Less than 0.1 miles east
P-56-152738	Historic McGrath ranch structure	1991	Recommended as not significant (Bissell 1990: 10)	Approximately 0.75 miles northeast

Additional Literature Review

Staff conducted additional research at the Energy Commission in-house library through inter-library loans services, California History Room of the California State Library in Sacramento, the Oxnard Public Library, online sources, interviews with California Department of Recreation and Parks staff and others, as well as consulted the reports contained in the applicant's records searches (AECOM 2015c). The purpose of this research was to obtain an understanding of the natural and cultural development of the land in and around the PAA, identify locations of potential historic built environment, archaeological resources, and ethnographic resources, and have a partial, chronological record of disturbances in the PAA. All consulted historic maps are presented in **Cultural Resources Appendix CR-1**.

Native American Consultation

Methods

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 Energy Commission adopted a Tribal Consultation Policy on December 10, 2014. 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. The applicant is then required to notify those Native Americans on the NAHC's list about the project and include a copy of all correspondence with the NAHC and Native Americans, including any written responses received, as well as a written summary of any oral responses in the AFC (Cal. Code Regs., tit. 20, §1704[b][2], Appendix B[g][2][D]). Recent amendments to CEQA (Assembly Bill 52) require CEQA lead agencies to conduct tribal consultations in very specific ways. However this project was initiated prior to when the new consultation procedures went into effect (July 31, 2015), and therefore are not applicable to this project proceeding.

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, and preventing irreparable damage to designated sacred sites and interference with the expression of Native American religion in California. It also provides a legal means by which Native American descendants 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 Lands 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. The NAHC Contacts database has the names and contact information for tribal entities that have expressed an interest in being contacted about projects proposed in specific tribally-affiliated areas.

Results

In an effort to conduct an independent analysis of ethnographic resources, staff also requested information from the NAHC on the presence of sacred lands in the vicinity of the proposed project, as well as a list of tribal entities to whom inquiries should be sent to identify both additional cultural resources and any concerns the they may have about the proposed project.

Staff contacted the NAHC in May of 2015 and requested a search of the Sacred Lands File and a Native American contacts list. The NAHC responded on June 16, 2015 with a list of tribal entities interested in consulting on development projects in the project area. A check of the NAHC Sacred Lands File failed to indicate any Native American traditional sites/places within the project site. Staff sent letters to all of the NAHC-listed tribal entities on July 1, 2015 inviting them to comment on the proposed project and offered to hold face-to-face consultation meetings if any tribal entities so requested. Emails were received from two groups on July 10, and both indicated that while they are interested in being updated on the project, they did not feel the need to be involved at that point in the process. A follow-up phone call and voicemail was left for the group from whom staff had not received a response on August 11, 2015.

In accordance with federal and state law, regulations, policies, and guidance, staff considered the proposed project's potential to cause significant adverse impacts on

environmental justice populations (E.O. 12898; 40 C.F.R., §§1508.8, 1508.14; Cal. Code Regs., tit. 14, §§15064(e), 15131, 15382; Cal. Code Regs., tit. 20, §1704(b)(2), App. B(g)(7); CEQ 1997). **Socioeconomics Figure 1**, which shows population based on race and ethnicity, and **Socioeconomics Table 3**, which displays population based on poverty, indicate that an environmental justice population does exist within a six-mile buffer of the proposed project area (see the **Socioeconomics** section of this document for a discussion of methods and composition of the environmental justice population). Staff also reviewed the ethnographic and historical literature to determine whether any environmental justice populations use or reside in the project area. Staff concluded that because there are no known currently used subsistence areas that could be impacted by the proposed project, Native Americans are not considered an environmental justice population for this project.

These efforts are documented in the "Ethnographic Setting" and "Native American Consultation" subsections, which can be found in **Cultural Resources Appendix CR-1**.

Cultural Resources Distribution Models

One critical use of information collected 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 of the P3 within the PAA was conducted for the AFC (AECOM 2015a). A further role of background research is to help develop models that predict the distribution of cultural resources across the PAA. Such models provide the means to tailor more appropriate research designs for the field investigations intended to complete a cultural resources inventory. These models 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 PAA. Such models also provide important contexts for the ultimate interpretation of the results of those investigations.

Models for predicting the distribution of prehistoric, ethnographic, and historic resources are developed here and are based upon information in the "Environmental Setting," "Prehistoric Setting," "Ethnographic Setting," and "Historic Setting" subsections of **Cultural Resources Appendix CR-1**, in addition to the information in the "Background Research" subsection of **Cultural Resources Appendix CR-1**. The discussions in the "Interpretation of Results" subsection below also employ the models.

Model for predicting Prehistoric Resources

The analysis of the information in the "Environmental Setting," "Prehistoric Setting," and "Background Research" subsections of the **Cultural Resources Appendix CR-1** leads to the conclusion that the likelihood of prehistoric deposits across the surface of the PAA is low-moderate and subsurface prehistoric deposits could be present in the PAA.

According to the *Geomorphology* subsection in **Cultural Resources Appendix CR-1**, 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 (Masters and Aiello 2007:40). The project area is

about 1 mile south of the mouth of the Santa Clara River, an area that was one of these estuaries. Long-term human habitation with respect to the estuary would have been restricted to the higher elevations around the margins of the estuary, with resource processing (e.g., shellfish or lithics) locations located closer to the water. It should be noted that the location of estuaries, lagoons, and bolsas changed over the past 4,000–5,000 years (Engstrom 2006:852, 854). The area around the estuary, therefore, cannot be assumed to have been uninhabitable for the entirety of the last 5,000 years. The resource base provided by this estuary, and other nearby estuaries, is known to have attracted humans to use and inhabit areas that are now in the project vicinity (Horne 1980; Greenwood and Browne 1969).

The applicant's consulting archaeologist suggests that despite previous ground disturbance at the proposed project site there is a moderate probability of encountering buried prehistoric resources (AECOM 2015c: 5-1). Hale et al. (AECOM 2015c: 4-6) describe the presence of dredged materials in the proposed P3 construction area and the fact that this material may be up to 1 foot thick in some areas. Staff agrees that prior disturbance slightly reduces the probability of encountering intact buried prehistoric resources, but does not agree that the identified prior disturbance preclude prehistoric resource existence or presumed integrity, and that there is a moderate probability of encountering buried prehistoric resources.

Whether the applicant would encounter buried prehistoric deposits during construction depends on several factors, including:

- the location and depth of construction
- 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
- the nature of past human activities in the area

The information provided in the AFC, Hale et al. (AECOM 2015c), and staff's analysis indicate that the proposed project site is on a Holocene-aged alluvial fan. Any deposition would have occurred within the last 10,000 years, during the time of human occupation of the proposed P3 project area. The *Environmental* and *Prehistoric* settings in **Cultural Resources Appendix CR-1** show that the project area contains abundant natural resources, and as evidenced by the recordation of 5 different cultural resources in the PAA, this area attracted humans during prehistoric times. Given these qualities of the PAA, staff suggests that the PAA is likely to contain buried prehistoric resources.

Model for predicting Ethnographic Resources

Ethnography fulfills a supporting role for other anthropological disciplines as well as providing contributions on its own merits. For example, ethnography provides a supporting role to the discipline of prehistoric archaeology by providing a cultural and historic context for understanding the people associated with the material remains of the past. By understanding the cultural milieu in which archaeological sites and artifacts

were manufactured, utilized, or cherished, this ethnographic information can provide greater understanding for identification efforts, making significance determinations per the National Historic Preservation Act (NHPA) or CEQA, as applicable; eligibility determinations for the NRHP or the CRHR, as applicable; and for assessing if and how artifacts are subject to other cultural resources laws, such as the Native American Graves Protection and Repatriation Act.

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, sacred sites, heritage resources, or historical resources that are objects, features, sites, places, areas or anything considered by affiliated tribal entities to be tribal cultural resources. 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.

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: Chapter 10):

> 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.[4]

Step 1 involves reviewing the project description and mapped project location and, based upon the geographic and environmental setting, formulate preliminary guiding questions that may be asked of people with cultural affiliation to the project area.

Step 2 involves contacting, informally discussing with, (or formally interviewing) people who might have a cultural relationship or affiliation to a given area.

As Step 2 is being conducted, a parallel Step 3 involves 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 archives, book stores, and other informational repositories (e.g., the internet), the people themselves or other ethnographers with previous experiences with the same

[4] See Pelto 2013, Chapter 16 for an overview of applied ethnographic methods for conducting focused inquiry conducted in limited timeframes.

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 Domains

Based upon the project description and project location maps three preliminary Guiding Questions were developed.

- The Chumash village of *Ishwa* is located on a map (Kroeber 1976: Plate 48) in the vicinity of the mouth of the Santa Clara River. Research the location and any information regarding this village site.
- Confirm that the plant gathering location noted near the McGrath property is, or is not, a Chumash plant gathering location.
- Research contemporary Chumash connections to prehistoric sites near the project site and around Oxnard.

As documented in the "Native American Consultation" subsection, staff made efforts to make preliminary contact with Native Americans affiliated with the project area.

Interviews

Staff did not complete any interviews for inclusion in the Preliminary Staff Assessment (PSA).

Archival Research

Staff made efforts to seek, obtain, and assess culturally relevant information from various archival sources. Information specifically sought related to *Ishwa*, the relationship between *Ishwa* and the Chumash, the plant gathering area near the McGrath property, as well as other archaeological sites in the vicinity of Oxnard. The California History Room of the California State Library, located in Sacramento, was also used for retrieving ethnographic information.

Field Visit

Ethnographic staff visited the project area and its surroundings on May 18, 2015. Staff's visual observation of the project site and vicinity did not result in the field identification of ethnographic resources because of the paved character and industrial nature of the area.

Ethnographic Method Constraints

Constraints on the ethnographic methods described above are twofold:

1. Chumash people had minimal communication with staff, and

2. Other than Kroeber's map of the village, staff found no available information concerning *Ishwa*.

Model of Historic Resources

Historic resources are divided into two types: historic archaeology and built environment.

Historic Archaeology model

The analysis of the information in the “Environmental Setting,” “Historic Setting,” and “Background Research” subsections of **Cultural Resources Appendix CR-1**, leads to the conclusion that historic archaeological deposits are unlikely across the surface of the PAA and there is a low potential for subsurface historic archaeological deposits as well.

The primary historic land uses in the vicinity of the proposed P3 include agricultural and industrial uses. Thus, potential buried historic archaeological resources in the PAA are expected to consist of refuse deposits associated with domestic, railroad, and industrial disposal.

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, archaeological, built-environment, monitoring reports for other projects in the PAA, and staff’s field visits to the proposed project site and vicinity. On the basis of the applicant’s background research for the present analysis, staff investigations and the results of the field efforts that are presently available, the total cultural resources inventory for the PAA includes five archaeological, and 7 built-environment resources.

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, 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

Methods

As stated in the AFC, a Secretary of the Interior qualified archaeologist surveyed the project site on January 12, 2015. The surface of the proposed project site consisted of sand and dune-related vegetation. Surface visibility was over 90 percent in the primary project locations, including the Gas Turbine Erection Area/Material Storage and Laydown in the northern portion of the PAA, as well as the Overflow Material Storage. The area along the route of the proposed waterline is mostly covered by asphalt, thus surface visibility was poor in the areas proposed for waterline installation (AECOM 2015c:4-5).

Results

No surficial prehistoric or historic resources were identified during the applicant's pedestrian survey. The applicant's archaeologist did note significant amounts of shell in some areas of the project site, but this shell appeared modern and was likely the result of dredging from the Edison Canal.

Historic Built Environment Survey

Methods:

Field Survey

Built environment staff reviewed the AFC and the Project Enhancement and Refinement supplement (AECOM 2015a, AECOM 2015b, AECOM 2015c, and AECOM 2015 d), associated cultural resources documents and materials provided by California Department of Parks and Recreation (Parks) staff and others. Built environment staff toured the project site on June 25, 2015 and conducted a reconnaissance survey of the PAA on June 26, 2015. Six properties identified by the applicant within the PAA, including MGS, were investigated. Built environment staff also made site visits to McGrath State Beach and Mandalay State Beach along with Parks staff. The McGrath State Beach property was specifically toured because it falls within the historic built environment PAA and the applicant's consultant did not consider the property in their analysis. Built environment staff identified a total of seven properties, including MGS and McGrath State Beach, of historic age, 45 years or older, within the PAA. These are listed in **Cultural Resources Table A4 and A5** in **Cultural Resources Appendix CR-1**.

In order to gain an understanding of the listed historic resources in the vicinity of the project, built environment staff also conducted a windshield survey of the downtown historic districts and landmarks in Oxnard and made a site visit to a nearby Ventura County landmark, the Olivas Adobe. These are listed in **Cultural Resources Table A6** in **Cultural Resources Appendix CR-1**.

One-Mile Literature and Records Search Area

The SCCIC search for the proposed P3 included seven studies involving built environment features within the PAA. These previously recorded resources include several local Ventura County Landmarks, oil drilling operation remnants, transmission towers and a residence once belonging to Dominick McGrath (VN-00236, VN-01475, VN-01509/01733, VN-02474, VN-02901 and P-56-152738). These reports are listed in **Cultural Resources Tables A1 and A2** in **Cultural Resources Appendix CR-1**

Cultural Resources Table A6 in **Cultural Resources Appendix CR-1** lists all the historic built environment resources that that are listed on the NRHP/CRHR or have been identified as landmarks by Ventura County in the vicinity of project. No listed historic built environment resources are within the one-mile literature search area or the PAA.

In addition to the literature and record search results prepared by the applicant, staff also reviewed other recent reports relative to other environmental studies in the vicinity.

The Santa Barbara County Reliability Project Final Environmental Impact Report (EIR) evaluated the Santa Clara Substation, a component of the Mandalay-Santa Clara transmission line, which originates at the MGS SCE substation. (Becker 2012).

Cultural Resource Descriptions and Eligibility Evaluations

Staff has identified a total of 10 cultural resources in the PAA. Of these, two are prehistoric sites (CA-VEN-667, and CA-VEN-1807), one is an ethnographic resource (CA-VEN-1234), and seven are built-environment resources.

Prehistoric Resources

CA-VEN-667
Originally recorded in 1979, this site consisted of lenses of midden and shell eroding from a sand dune. The site was updated in 1997 and the lenses were still extant at this time. Both recordings noted disturbance to the site from oil field-related activities. There was a note in the 1979 site form that a burial was exhumed about 200 yards north of West Fifth Street, which would be about 1,200 feet from the PAA. The site was excavated in 1998 and the information potential was exhausted by this research, thus the site is not recommended eligible for the CRHR (Whitley and Simms 1998: 15).

CA-VEN-1807
This site was recorded in 2010 and consisted of a light scatter of prehistoric materials, including one piece of flaked stone, one earthenware pottery fragment, and one groundstone fragment. Two pieces of mid-twentieth century glass insulator fragments were also noted. No eligibility recommendation of this site was provided in the record search; however, staff recommends that due to the sparse nature of the undiagnostic artifacts, the site is unlikely to meet any of the eligibility criteria for the CRHR.

Ethnographic Resources

CA-VEN-1234
This site was recorded in 1979 as a modern ethnographic plant-collecting area for basket weaving material, *Juncus* spp. However, upon additional consultation with Native Americans and further research (Horne 1980: 3.0-25), it was found that this is not a plant collection area, and that an area in the vicinity of Moranda Park, located about 5 miles south of the project, is preferred. Because CA-VEN-1234 was found to not be an extant plant collecting area, the site is not eligible for the CRHR.

California Register of Historical Resources Eligibility

Staff does not recommend that CA-VEN-667, CA-VEN-1807, or CA-VEN-1234 are eligible for the CRHR under any of the criteria for listing. Regardless of staff's recommendation, these sites are unlikely to be impacted by the proposed P3 project.

Built Environment Resources

As noted above in the survey and research discussion, staff identified seven historic-period built environment resources located within the PAA. These are listed in **Cultural Resources Appendix 1 Tables A4 and A5**. Six of the resources are industrial properties, including MGS, and one, McGrath State Beach, is a unit of the California State Parks and Recreation system. Staff concludes that the seven resources are

ineligible for listing on the CRHR under Criteria 1–4, and therefore any potential project impacts would not be significant. A brief discussion of seven resources found ineligible for listing on the CRHR follows. A more detailed discussion of these resources may be found in **Cultural Resources Appendices 1 and 2**.

Staff conducted a reconnaissance-level windshield survey on June 26, 2015, of the McGrath State Beach adjacent to the MGS to the north. A detailed historical resource evaluation of McGrath State Beach is included in **Cultural Resources Appendix 2**.

The applicant investigated and evaluated the historic significance of six historic-age built environment resources within the PAA. Four of those were evaluated in their entirety: the **Mandalay Generating Station** (1956-1959), **the SCE Switchyard** (1959), the **SCE Substation** (1958) and a property known as the **Jeep Trail Tank Farm** (1954-1967). Two linear resources were partially evaluated only for their segments located within the PAA: the **Edison Canal** (1957-1959) and a portion of the **Mandalay-Santa Clara Transmission Line** (ca. 1958). None of the built environment resources were recommended to be eligible for the CRHR under Criteria 1-4. Staff agrees with these conclusions. More detail about these resources and related contextual information is included in **Appendix CR-1**.

Mandalay Generating Station (MGS)

Based upon the Historical Resource Evaluation (Report of Findings) filed for this AFC (AECOM 2015a, AECOM 2015c), and staff's own independent research and analysis, staff concludes that the MGS is not an historical resource for the purposes of CEQA. MGS does not meet the criteria for listing in the NRHP or the CRHR.

Considering MGS under Criterion 1, it has not been found to have a significant contribution in the areas of power generation, steam power plants or the history of the regional power development. While it was an important post-war component of SCE's ability to provide reliable electric generation for a growing population, it did not make a significant contribution in its own right to that development.

Considering MGS under Criterion 2, it is not associated with a historically significant person or entity. SCE was one of several power companies in California undergoing rapid expansion in the post-war period and MGS was one of many plants built by SCE to meet that need.

Considering MGS under Criterion 3, it is not historically significant for its design, architecture or construction. MGS is a utilitarian facility with no architectural distinction. While the dredging and construction of the associated Edison Canal as an intake channel for cooling water was a substantial effort, it does not rise to the level of historical significance under Criterion 3.

Considering MGS under Criterion 4, it does not appear that it would yield important information relative to history. Criterion 4 is rarely applied to the built environment and it is highly unlikely MGS as a built environment feature would yield information especially pertinent to national, regional or local history.

Therefore, the MGS as an entity with its appurtenant facilities does not rise to the level of significance as an historical resource under CEQA.

Mandalay-Santa Clara Transmission Line

The Mandalay-Santa Clara Transmission Line was constructed in 1958 to deliver power from the new MGS to communities in Ventura and Santa Barbara counties. The line is approximately 9.4 miles in length, consisting of above-ground poles, towers and wires. A single tower of this line was previously recorded (P-56-153002-Crawford 2010/AECOM 2015b). As mentioned earlier, the Santa Barbara County Reliability Project Final EIR evaluated the Santa Clara Substation, a component of the Mandalay to Santa Clara transmission line, which originates at the MGS SCE substation. It was recommended not eligible for inclusion on the NRHP/CRHR, as just one of many post-World War II substations built to supply electricity to a growing population (Becker 2012).

The applicant evaluated the four towers of the line which fall within the PAA as an update to P-56-153002 and concluded that the towers and that portion of the line within the PAA are not eligible as historical resource for the CRHR, unless further study of the entire line would find it eligible and the towers as contributors to the resource. The applicant concluded this for Criteria 1-4. Adding the conclusion of ineligibility drawn by Becker 2012 relative to the transmission line's terminus at the Santa Clara Substation, a strong case is made that the Mandalay-Santa Clara Transmission Line is not an historical resource under CEQA. Staff concurs with applicant's conclusions (AECOM 2015b:4-6, 4-7).

SCE Switchyard

The SCE Switchyard was constructed concurrently with MGS in 1959. SCE has retained ownership of the switchyard while MGS has had several owners since being spun-off by SCE. The utilitarian switchyard transmits the electric power generated by MGS to the Mandalay-Santa Clara Transmission Line. Lacking any connection to a broad pattern of history, persons of significance, creative people or designers or having imbedded information important to history or prehistory of the area, the SCE Switchyard is recommended not eligible for the CRHR under Criteria 1-4 and therefore is not an historical resource under CEQA.

SCE Substation

The SCE Substation is located across Harbor Boulevard from the MGS and the SCE Switchyard. The Substation dates to 1958 and was built in conjunction with MGS to distribute power through the Mandalay-Santa Clara Transmission Line. Buildings are strictly utilitarian and without architectural adornment, unlike some substations built earlier in the 20th Century (local examples would include Colonia, Ventura and Santa Paula Substations-[Huntington 2015]). Lacking any connection to a broad pattern of history, persons of significance, creative people or designers or having imbedded information important to history or prehistory of the area, the SCE Substation is recommended not eligible for the CRHR under Criteria 1-4 and therefore is not an historical resource under CEQA.

Jeep Trail Tank Farm

The construction of tanks and related facilities on the Jeep Trail Tank Farm dates from 1954 to 1959. Aerial imagery indicates two additional tanks were in place by 1967 (AECOM 2015c: 4-11). Two tanks were removed prior to 1977, and the property began to incorporate agricultural uses. Today the tank farm is a mix of agricultural fields, utility and farm buildings, storage tanks and naturally vegetated areas. Lacking any connection to a broad pattern of history, persons of significance, creative people or designers or having imbedded information important to history or prehistory of the area, the Jeep trail Tank Farm is recommended not eligible for the CRHR under Criteria 1-4 and therefore is not an historical resource under CEQA.

Edison Canal

The Edison Canal is associated with the construction of MGS Units 1 & 2, as it provided the source of cooling water for the power generating station. The original intake at Port Hueneme was later relocated and became the basis for the development of Channel Islands Harbor. See the resource description in **Cultural Resources Appendix CR-1** for additional contextual information. While the canal gained some local notoriety in the press as the giant dredger known as “Explorer” carved out the 140 foot-wide channel, it was not a unique or trendsetting engineering development. Lacking any connection to a broad pattern of history, persons of significance, creative people or designers or having imbedded information important to history or prehistory of the area, the Edison Canal is recommended not eligible for the CRHR under Criteria 1-4 and therefore is not an historical resource under CEQA.

McGrath State Beach

Dating to its design in 1962 and construction in 1964, the McGrath State Beach is over 50 years of age as of 2015. For the purposes of evaluating historical resources under CEQA, properties 45 years or older are generally considered for their historical significance. The state beach is located on parcel number APN 138008006-5. This parcel falls within the one-half mile minimum PAA buffer for projects in rural areas. The applicant did not record or evaluate McGrath State Beach as a historical resource, even though a large portion of the property falls within the PAA as shown on **Cultural Resources Figure 2**. The AFC states*, “In some instances, the PAA and identification efforts for historical architecture were limited to the area that is reasonably subject to visual or direct impacts and generally does not consider properties set far back from the edge/boundary of a large parcel (e.g., where there is a sliver impact), or entire complexes or rows of structures on a large parcel”* (AECOM 2015c: 3-1). Elsewhere in the AFC, the applicant states, *“As part of the field effort, several features and properties were identified in the PAA that were not recorded or evaluated. Based on background research and visual inspection, these properties consisted of primarily of buildings and structures built less than 45 years ago (and not possessing exceptional importance of an extent to be considered significant resources), or are minor, fragmentary, and ubiquitous features”* (AECOM 2015c: 4-1).

It is not clear why the applicant chose not to evaluate McGrath State Beach, even though the property lies within the established PAA and the P3 project site is visible from several areas of the park and campground. Staff, in conducting its analysis considers architectural resources within a larger built environment context, which may

range from buildings to water systems, bridges, parks and other types of human-crafted spaces. McGrath State Beach and its facilities is a park, comprising both natural areas and areas designed and built by human beings. In order for staff to fully assess the potential effects of the proposed project, all built environment resources 45 years or older within the PAA must be examined. Staff has completed a field investigation and research on McGrath State Beach, the relevance of the McGrath family in Oxnard area history and the larger central and south coast state beach system, in an effort to determine the potential for impacts to an historic-age resource. The result of that investigation is found in the *Historical Evaluation of McGrath State Beach* in **Cultural Resources Appendix CR-2** of this document. The evaluation concluded that, while McGrath State Beach is a component of the pattern of intensive development of California's State Beaches and Parks from 1960 to 1980, it is not individually of historic significance in that pattern of development and therefore not recommended as eligible under Criterion 1. The evaluation also concluded that the association with the McGrath family, a prominent farming family in the Oxnard area, is not sufficient to raise it to the level of significance required under Criterion 2. Criterion 3 was considered for the association of the state beach design with notable landscape architects and Parks staff, but concluded that the association was not significant enough to meet the requirements of Criterion 3. When considered under Criterion 4, the developed grounds and structures at McGrath State Beach, or the system as a whole, would not be likely to yield important information that is not already known. For these reasons, McGrath State Beach appears to be ineligible under Criterion 4.

Historic Age Structures within the PAA and One Mile Literature Search Area

Staff investigated historic age built environment resources in the PAA (see **Cultural Resources Figure 2**) and the One Mile Literature Search Area and have not found any properties that would be eligible as historical resources under CEQA.

California Register of Historical Resources Eligibility

Staff recommends that none of the built environment resources identified during the course of the P3 AFC process are eligible for listing in the CRHR. The MGS itself, while of historic age, is not eligible because it does not rise to the level of significance such that it would be considered a historical resource under CEQA. The additional resources identified by staff in the built environment PAA also do not meet the CRHR criteria, and thus are not considered historical resources.

Interpretation of Results

Model of Prehistoric and Historic Archaeological Resources

The AFC and associated cultural resources documentation suggest that the PAA has a low-moderate potential to contain prehistoric and historic archaeological resources on the ground surface because of the degree of surface disturbance. These expectations were borne out by the cultural resources inventory described in this document; however, it should be noted that the lack of surface manifestations of an archaeological site does not preclude subsurface deposits.

The AFC and associated cultural resource documentation states that buried archaeological resource potential is moderate based on the geomorphological character

of the PAA. Staff agrees with this assessment based on staff's independent analysis of the proposed project and taking into consideration nearby sites with buried archaeological resource potentials.

DIRECT/INDIRECT IMPACTS AND MITIGATION

In the abstract, direct impacts to cultural resources are those associated with project development, construction, and operation. Construction usually entails surface and subsurface disturbance of the ground, and direct impacts to archaeological resources may result from the immediate disturbance of the deposits, whether from vegetation removal, vehicle travel over the surface, earth-moving activities, excavation, oily sand remediation, or demolition of overlying structures. Construction can have direct impacts on historic standing structures when those structures must be demolished or 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 adjacent structures and related setting, feeling and association. New structures might also 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 to resources by non-project-affiliated personnel and the potential for vandalism or greater weather exposure becomes possible.

Ground disturbance accompanying construction at a proposed plant site has the potential to directly affect archaeological resources, the significance of which is unknown 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 the proposed power plant into this particular setting could have a direct impact on the integrity of association, setting, and feeling of nearby standing historic structures.

Construction Impacts and Mitigation

The project, as described in the November 2015 Project Enhancement and Refinement (AECOM 2015d), includes demolition of MGS Units 1 and 2. Demolition of Units 1 and 2 would take place within the bounds of the MGS property and would use on-site construction and laydown areas. Demolition would be to grade and would involve demolition to grade of the Units 1 and 2 turbine plants and buildings, boiler plants and related facilities, and the 200-foot-tall-stack. Additionally, there would be removal of asbestos and contaminated equipment, as well as transformers and associated electrical equipment to the switchyard. No below-grade demolition is proposed. Some filling of sub-grade infrastructure areas with crushed concrete from the demolition activities is proposed. No excavation to remove foundations or piping would be required (AECOM 2015d: 1-2, 2-1, 2-2, 4-44).

The proposed P3 would not have a significant impact on known significant prehistoric, ethnographic and historic resources. With the adoption and implementation of the proposed Conditions of Certification **CUL-1** through **CUL-8**, the proposed P3 would not have a significant impact on potentially significant prehistoric and historic archaeological resources that may be discovered during construction. Staff recommends that the Energy Commission adopt Conditions of Certification **CUL-1** through **CUL-8**. These conditions are intended to facilitate the identification and assessment of previously unknown prehistoric and historic archaeological resources encountered during construction and to mitigate any significant project impacts on any newly found resources assessed as significant and on any known resources that may be affected by the project in an unanticipated manner. To accomplish this, the conditions provide for:

- The hiring of a Cultural Resources Specialist, Cultural Resources Monitors, and Cultural Resources Technical Specialists;
- The archaeological and Native American monitoring of ground-disturbing activities;
- The recovery of significant data from discovered archaeological deposits;
- The writing of a technical archaeological report on monitoring activities and findings;
- The curation of any recovered artifacts and associated notes, records, and reports; and
- Cultural resources surveys, if the applicant chooses to use private soil borrow or disposal site rather than a commercial one.

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

Assessment of Direct Impacts on Prehistoric and Historic Archaeological Resources and Proposed Mitigation

Prehistoric and Historic Archaeological Resources on the Surface of the PAA

No archaeological resources were recorded on the surface of the PAA where direct impacts could occur. Thus, there are no surficial historical resources for the purposes of CEQA and no impacts to any surficial historical resources.

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 and preservation of archaeological resources throughout the span of human occupation in the Oxnard area. The proposed project could result in damage to buried archaeological resources, if present.

Staff concludes that expectable ground-disturbance impacts on buried archaeological resources would best be minimized by implementing a comprehensive cultural resources mitigation and monitoring program for the proposed project. Implementation of a well-planned mitigation and monitoring program would reduce the potential project impacts to a less-than-significant level.

Assessment of Direct Impacts on Ethnographic Resources

The ethnographic resource (CA-VEN-1234) has been determined to not be an extant or historic Chumash plant gathering area. Staff does not expect that the proposed project would result in impacts on ethnographic resources.

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

Built environment technical staff has reviewed the literature search materials, other available studies as noted herein, engaged in independent research and performed on-site and off-site reconnaissance surveys. Based on the information available, staff concludes that the proposed P3 project would have no direct impacts on known built environment historical resources. Therefore, staff is not recommending any mitigation measures for built environment resources.

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 has reviewed the literature search materials, other available studies as noted herein and performed on-site and off-site reconnaissance surveys. Based on the information available, staff concludes that the proposed P3 would have no indirect impacts on known prehistoric, ethnographic, or historic resources. Therefore, staff does not recommend any mitigation measures for indirect impacts to prehistoric, ethnographic, or historic resources.

Operation Impacts and Mitigation

The measures proposed above and below for the mitigation of impacts to previously unknown prehistoric and historic archaeological resources found during construction would mitigate impacts that occur during operation-phase repairs to unknown sites. Operation of the proposed P3 project would have no impacts upon ethnographic or built environment resources as none have been determined to be historical resources.

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 (Cal. Code Regs., tit. 14, § 15130). Cumulative impacts to historical resources in the project vicinity could occur if any other existing or proposed projects, in conjunction with the proposed P3, had or would have impacts on historical resources that, considered together, would be significant.

For the purposes of cumulative archeological impacts analysis, for both prehistoric and historic archaeological resources, staff has determined that the cumulative area of analysis for archaeological resources comprises a 6-mile-diameter semicircle from the

project site (**Executive Summary Figure 1**). The cumulative projects area of analysis encompasses the project site and geographic qualities that were likely of concern to the prehistoric inhabitants of the project vicinity.

Staff identified a total of 133 cumulative projects in the 6-mile buffer. Of these 133 projects with information available concerning impacts or potential impacts to archaeological historical resources, at least eight of these projects could contribute to a cumulative impact to archaeological resources (**Cultural Resources Appendix CR1 Table A7)**.

The previous ground disturbance from prior projects and the ground disturbance related to construction of the proposed P3 and other proposed projects in the vicinity could have a cumulative impact on buried, as-yet unknown archaeological deposits, either historical or unique archaeological resources (as defined under CEQA). However, staff-proposed Conditions of Certification **CUL-1** through **CUL-8** would reduce project-specific impacts to a less-than-significant level and therefore, the proposed project's contribution to cumulative impacts on prehistoric and historic archeological resources would be less than cumulatively considerable.

The P3 would not directly impact any known built environment historical resource. Although the MGS would be demolished as part of P3, MGS is not eligible to the California Historical Resources Register per CEQA, thus there will not be a cumulative impact to build environment historical resources from P3.

COMPLIANCE WITH LORS

The applicable state laws, ordinances, regulations, and standards are listed above in **Cultural Resources Table 1**. Staff has not identified any cultural resources in the PAA that would qualify as historical or unique archaeological resources for the purposes of CEQA, and thus can definitively state that the project would comply with all identified LORS. Impacts to as-yet-unidentified prehistoric and historic archaeological resources that qualify as historical or unique under CEQA could occur during construction and operation of the proposed project; staff-proposed Conditions of Certification **CUL-1** through **CUL-8** would mitigate such impacts to less-than-significant levels. These conditions establish the necessary protocols to constructively handle the issues identified in **Cultural Resources Table 1**: the treatment of human remains discoveries during project-related ground disturbance (**CUL-1 – CUL-8**), prevention of unauthorized removal of Native American remains or artifacts from a Native American grave or cairn (**CUL-1 – CUL-8**), and non-disclosure of records pertaining to ethnographic consultants or archaeological site information (**CUL-3**).

The Ventura County General Plan, Oxnard General Plan and other supporting municipal codes, policies, and documents have language promoting the general preservation of cultural resources (see **Cultural Resources Table 1**). The conditions of certification require specific actions not just to promote but to affect historic preservation and mitigate impacts to all historical resources in order to ensure CEQA compliance, therefore any impacts to buried, as-yet unknown resources would be mitigated to a less than significant level through the implementation of staff-proposed Conditions of Certification **CUL-1 – CUL-8**.

CONCLUSIONS AND RECOMMENDATIONS

Based upon staff's background research and the AFC and associated documentation, staff concludes that there would be no significant impacts from the proposed P3 on known prehistoric and historic archaeological resources. There is moderate potential for subsurface deposits in the PAA, and the conditions of certification would permit the impacts to these resources to remain at a level that is less than significant.

Based upon staff's investigation of a number of built environment resources of historic age within the PAA and the results of a one-mile literature search area for the project, staff concludes that there would be no significant impacts from the project on built environment resources.

As a result of ethnographic research, staff concludes that there are no ethnographic resources that will be impacted by the proposed project. The ethnographic background information included in **Cultural Resources Appendix CR-1** provides a brief context for the prehistoric resources discussed above, and one ethnographic resource that was found to not be extant.

Staff has considered environmental justice populations in its analysis of the amended project. Staff has not identified any Native American environmental justice populations that either reside within 6 miles of the project or that rely on any subsistence resources that could be impacted by P3.

PROPOSED CONDITIONS OF CERTIFICATION

CUL-1 APPOINTMENT AND QUALIFICATIONS OF CULTURAL RESOURCES SPECIALIST (CRS)

A. CULTURAL RESOURCE SPECIALIST

1. Appointment and Qualifications

The project owner shall assign a Cultural Resources Specialist (CRS) and at least one Alternate CRS to the project. The project owner shall submit the resumes of the proposed CRS and Alternative CRS(s), with at least three references and contact information, to the Energy Commission Compliance Project Manager (CPM) for review and approval.

The CRS and Alternate CRS(s) shall have training and background that 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. 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 project owner may replace the CRS by submitting the required resume, references and contact information of the proposed replacement CRS to the CPM.

2. Duties of Cultural Resources Specialist

The CRS shall manage all cultural resource monitoring, mitigation, curation, and reporting activities, and any pre-construction cultural resource activities, 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.

After all ground disturbances are 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 cultural resource conditions shall continue to apply during operation of the proposed power plant, limited to those ground disturbing activities in non-fill sediments.

B. CULTURAL RESOURCES MONITORS

1. Appointment and Qualifications

The CRS may assign Cultural Resources Monitors (CRMs). 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.

C. NATIVE AMERICAN MONITORS

1. Appointment and Qualifications:

The project owner shall obtain the services of qualified Native American Monitors (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 of Native American Cultural, Religious, and Burial Sites (NAHC 2005).

D. 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. The project owner shall submit the specified information at least 75 days prior to the start of (1) ground disturbance (as defined in the Compliance Conditions and Compliance Monitoring Plan section); (2) post-certification cultural resources activities (including, but not limited to, "survey", "in-field data recording," "surface collection," "testing," "data recovery" or "geoarchaeology"); or (3) site preparation or subsurface soil work during pre-construction activities or site mobilization.

3. The project owner may replace a CRS by submitting the required resume, references and contact information to the CPM at least 10 working days prior to the termination or release of the then-current CRS. 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 CRS is proposed to the CPM for consideration.

4. At least 20 days prior to ground disturbance, the CRS shall provide proof of qualifications for any anticipated CRMs and additional specialists for the project to the CPM.

5. 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.

6. 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.

7. 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.

8. 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.

9. No ground disturbance shall occur prior to CPM approval of the CRS and alternates, unless such activities are specifically approved by the CPM.

CUL-2 INFORMATION TO BE PROVIDED TO CRS

Prior to the start of ground disturbance, the project owner shall provide the CRS with copies of the application for certification (AFC), data responses, confidential cultural resources reports, all supplements, the Energy Commission staff's Cultural Resources Final Staff Assessment, and the cultural resources Conditions from the Final Decision for the project, if the CRS does not already possess copies of these materials. 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 National Register of Historic Places (NRHP)/California Register of Historical Resources (CRHR) -eligible cultural resources, including any historic built environment resources, identified in the project area of analysis.

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. 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.

6. If a new CRS is approved by the CPM as provided for in CUL-1, 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 within 10 days of such approval.

CUL-3 CULTURAL RESOURCES MITIGATION AND MONITORING PLAN (CRMMP)

Prior to the start of ground disturbance, the project owner shall submit the 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 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."

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 will 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 Department of Parks and Recreation (DPR) 523 forms, 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's) *Guidelines for the Curation of Archaeological Collections* (1993, or future updated guidelines from the SHRC), 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 7050.5(b) and Public Resources Code 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 Resource 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, 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 the State Historic Resources Commission's (SHRC) *Guidelines for the Curation of Archaeological Collections* (1993, or future updated guidelines from SHRC), 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 FINAL CULTURAL RESOURCES REPORT (CRR)

The project owner shall submit the final 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 Archaeological Resource Management Report (ARMR) format. The final CRR shall report on all field activities including dates, times and locations, results, samplings, and analyses. 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 on the same day as the suspension/extension request. 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 at the same time as the withdrawal request.

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 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 CULTURAL RESOURCES WORKER ENVIRONMENTAL AWARENESS PROGRAM (WEAP)

Prior to and for the duration of ground disturbance, 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, 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 CULTURAL RESOURCES MONITORING

The project owner shall ensure that a CRS, alternate CRS, or CRMs shall be on site for all ground disturbance in areas slated for excavation into non-fill (native) sediments.

Prior to the start of ground disturbance, the project owner shall notify the CPM and all interested Native Americans of the date on which ground

disturbance will ensue. 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 observe both 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 slated for excavation into non-fill (native) sediments. Contact lists of interested Native Americans and guidelines for monitoring shall be obtained from the NAHC. Preference in selecting a 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 information.

- 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, and 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., P3-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.
    - 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.

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).

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 CPM will notify all Native Americans with whom the Energy Commission 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 POWERS OF CRS / CULTURAL RESOURCES DISCOVERY PROTOCOLS

The CRS shall have the authority to halt ground disturbance 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 CRS), 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 § 7050.5(b) and shall additionally 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 elsewhere, 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 morning, including a description of the discovery (or changes in character or attributes), the action taken (i.e., work stoppage or redirection), a recommendation of CRHR eligibility, and recommendations for data recovery from any cultural resources discoveries, whether or not a determination of CRHR 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.

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

Verification:

1. At least 30 days prior to the start of ground disturbance, the project owner shall provide the CPM and CRS with a letter confirming that the CRS, Alternate CRS, and CRMs have the authority to halt 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 morning.

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 FILL SOILS

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.

REFERENCES

The *TN# 00000* in a reference below indicates the transaction number under which the item is catalogued in the Energy Commission's Docket Unit. The transaction number allows for quicker location and retrieval of individual items docketed for a case or used for ease of reference and retrieval of exhibits cited in briefs and used at Evidentiary Hearings.

AECOM 2015a—AECOM. Application for Certification for Puente Power Project (15-AFC-01).Volume 1. TN # 204219-1 -14. Prepared for: NRG Energy Center Oxnard LLC. April 2015.

AECOM 2015b—AECOM. Application for Certification for Puente Power Project (15-AFC-01).Volume 2, Appendix E2. TN # 204220-5. Prepared for: NRG Energy Center Oxnard LLC. April 2015.

AECOM 2015c—AECOM. Confidential Archaeological Resources Technical Report for the Puente Power Project. (15-AFC-01-Appendix E). TN # 204223. Prepared for: NRG Energy Center Oxnard LLC. April 2015.

AECOM 2015d—AECOM. Puente Power project (15-AFC-01). Project Enhancement and Refinement, Demolition of Mandalay Generating Station Units 1 and 2. TN# 206698. November 19, 2015.

Becker 2012—Wendy L. Tinsley Becker. *Historic Resource Analysis Report/Historic Property Report, Southern California Edison Company Santa Barbara County Reliability Project*. Urbana Preservation & Planning, LLC. Revised October 2012.

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CULTURAL RESOURCES ABBREVIATION AND ACRONYM GLOSSARY

ACC	air-cooled condenser
ACHP	Advisory Council on Historic Preservation
AFC	Application for Certification
ARMR	Archaeological Resource Management Report
asl	above sea level
bgs	below ground surface
Cal. Code Regs.	California Code of Regulations
CCC	California Coastal Commission
CCGT	combined-cycle gas turbine
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
C.F.R.	Code of Federal Regulations
CHRIS	California Historical Resources Information System
COE	Corps of Engineers, U.S. Army
Conditions	conditions of certification
CRHR	California Register of Historical Resources
CPM	Compliance Project Manager
CRM	Cultural Resources Monitor
CRMMP	Cultural Resources Monitoring and Mitigation Plan
CRR	Cultural Resource Report
CRS	Cultural Resources Specialist
DPR	Department of Parks and Recreation (State of California)
DPR 523	Department of Parks and Recreation cultural resources recordation form
E.O.	Executive Order (presidential)

° F	degrees Fahrenheit
FSA	Final Staff Assessment
gal	gallon(s)
GLO	General Land Office
HABS	Historic American Building Survey
HAER	Historic American Engineering Record
HALS	Historic American Landscape Survey
HDP	Heritage Documentation Programs
HRSG	heat recovery steam generator
LORS	laws, ordinances, regulations, and standards
MCR	Monthly Compliance Report
MLD	Most Likely Descendent
MRS	Marine Research Specialists
NAHC	Native American Heritage Commission
NAM	Native American Monitor
NHPA	National Historic Preservation Act
NPS	National Park Service
NRHP	National Register of Historic Places
OHP	Office of Historic Preservation
PAA	Project Area of Analysis
PCH	Pacific Coast Highway (State Route 1)
PSA	Preliminary Staff Assessment
P3	Puente Power Project
SCCIC	South Central Coastal Information Center
SHL	State Historical Landmark
SHPO	State Historic Preservation Officer

SOI	Secretary of the Interior
SST	sea surface temperature
Staff	Energy Commission cultural resources technical staff
STG	steam turbine generator
TCP	traditional cultural property
USGS	U.S. Geological Survey
WEAP	Worker Environmental Awareness Program

CULTURAL RESOURCES APPENDIX CR-1

BACKGROUND INFORMATION NOT INCLUDED IN THE PSA

The following information in this **Cultural Resources Appendix CR-1** is included to provide the reader more context to gain a better understanding of those relevant aspects briefly mentioned in the PSA Cultural Resources section.

ENVIRONMENTAL SETTING

Overview

As explained in the AFC, the modern "climate of the Southern California Coast is mild, with warm summers and cool winters. Rainfall is moderate, and concentrated in the winter months, although summer showers do occur when onshore air circulation patterns become established. Native vegetation in the vicinity is comprised of the Coastal sage scrub that was once common in coastal Ventura County. Coastal sage scrub is characterized by a suite of low, aromatic, drought-tolerant shrubs and sub-shrub species (Munz and Keck, 1973)" (AECOM 2015c: 3-3).

The P3 site is in the Ventura Basin, on the westernmost edge of the Oxnard Plain immediately adjacent to the Pacific Ocean. The vicinity immediately surrounding P3 is characterized by a mix of agricultural, residential, and industrial development (AECOM 2015a:4.3-3). The 3-acre project site within the 36-acre MGS property is located at approximately 14' in elevation at mean level low water (MLLW). Groundwater is relatively high in the vicinity, at approximately nine feet below ground surface and is influenced by tidal fluctuations, precipitation, irrigation of nearby agricultural fields and groundwater pumping (AECOM 2015a: 2-3).

Paleoclimate and Ecology

The paleoclimate and ecology of the project vicinity is well described by the Applicant (AECOMc: 3-1 – 3-2). Staff summarizes those descriptions here and adds some project-specific information below. Throughout the Holocene and the preceding Pleistocene time periods, the sea level on the California Coast has fluctuated significantly and has in turn, affected the local environment. The paleoclimatic studies conducted by Masters and Aiello (2007) and Peltier (2002) yield an understanding of the project vicinity's changing landscape and ecology during the span of human habitation of the southern coastline. An accurate picture of paleoclimate and ecology provides explanations for and expectations of the range of cultural resources in the project vicinity.

At the transition from the Pleistocene Epoch's[5] Last Glacial Maximum (LGM) to the Holocene Epoch[6], mean sea level was significantly lower than present levels. While the

[5] The interval of time (epoch) spanning 2.588 million years ago–11,700 B.P. (Cohen et al. 2013).

[6] The Holocene Epoch is the interval from 11,700 B.P. to the present day (Cohen et al. 2013). Geoscientists divide the Holocene Epoch into three broad divisions: Early (11,500–7550 B.P.), Middle

P3 is located adjacent to the coast line today, at the LGM 20,000 years ago, sea level was about 400 feet lower.

The Channel Islands were larger and closer to the mainland during the LGM–Holocene transition as well: at 12,000 B.P., Santa Cruz Island was approximately 10 miles off the coast of what is now Oxnard; two thousand years later, rising sea level increased that distance to 15 miles. Presently, the island is over 20 miles west of the PAA. (Porcasi et al. 1999: Figure 1). Additionally, under the relatively rapid sea level rise that occurred since the LGM, the dominant geomorphic process shifted from erosion to deposition, with finer sediments deposited in bays and estuaries formed at the mouths of coastal canyons rather than along the coastline. Essentially, during the Late Pleistocene and Early Holocene the shores in the project area were cold, rocky, and cobbled, punctuated by estuarine ebayments (Graham et al. 2003:35-36).

The coastal environment in the project area has undergone significant change over the last 10,000 years. Deep, well-circulated estuaries that supported fish nurseries, shellfish, shorebirds, and marine mammals characterized the coast between 10,000 and 8,200 years ago when sea level was about 35 meters below present sea level. Beaches lacked sand and shallow rocky reefs, which were productive fish habitats, were widespread (Masters and Aiello 2007: 40).

One of the impacts of intense El Niño/Southern Oscillation (ENSO) events 6,000 to 5,000 years ago was increased sediment in tidal areas. Estuaries became shoaled and less productive, and sand and mud flats expanded which marked the transition to infaunal ecosystems (Graham et al. 2003: 36; Masters and Aiello 2007: 40).

The large estuaries that formed during the earlier period were replaced with shallow wetlands and lagoons during the Late Holocene. During major drought episodes these estuaries would often close because the inland rivers were unable to break the sand barrier to the coast, thus resulting in hypersaline conditions and decreased productivity in the lagoons.

The wet winter/dry summer climate of southern California is thought to have persisted for as many as 160,000 years (Masters and Aiello 2007:40). Late Pleistocene/Early Holocene (ca. 14,000–7550 B.P.) annual precipitation appears to have been similar to twenty-first century conditions. The project vicinity appears to have experienced bimodal precipitation patterns, with precipitation occurring during summer and winter months.

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 (450–50 B.P.) ended with five El Niño events in a 20-year period. (Engstrom 2006:850–851.)

(7000–4000 B.P.), and Late (4000 B.P.–present) (see Meyer et al. 2009:ii; West et al. 2007:20–21). This PSA follows Meyer et al. (2009).

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 (AECOM 2015a: 4.2-2 – 4.2-13). The ecological community most closely associated with the P3 project area, and that which was available to prehistoric Native Americans, is that associated with dune habitat and scattered alkali meadows between the dunes. The vegetation communities that were present during prehistoric times are listed here with some native species that typically occur in these areas.

- Arroyo Willow Thickets – Some of the species associated with this habitat include arroyo willow (Salix lasiolepis), (Baccharis pilularis, (Baccharis salicifolia), spiny rush (Juncus acutus), poison oak (Toxicodendron diversilobum), turkey vulture (Cathartes aura), northern harrier (Circus cyaneus), Cooper's hawk (Accipter cooperii), American crow (Corvus brachyrhynchos), and common raven (Corvus corax). These thickets occur on stream banks and benches, slope seeps, and stringers along drainages (Sawyer et al. 2009), primarily along the north side of the project site, around McGrath Lake.
- California Bulrush Marsh – Some of the species associated with this habitat include California bulrush (Schoenoplectus californicus), alkali bulrush (Bolboschoenus maritimus), hardstem bulrush (Schoenoplectus acutus), cattails (Typha spp.), northern harrier (Circus cyaneus), sora (Porzana carolina), and marsh wren (Cistothorus palustris). This marsh habitat occurs on the margins of McGrath Lake, sand between open water habitats and scrub habitats.
- California Sagebrush Scrub – Some of the species associated with this habitat include California sagebrush (Artemisia californica), coyote brush (Baccharis pilularis), bush monkey flower (Diplacus aurantiacus), California encelia (Encelia californica), western ragweed (Ambrosia psilostachya), poison oak (Toxicodendron diversilobum), turkey vulture (Cathartes aura), black phoebe (Sayornis nigricans), Say's phoebe (Sayornis saya), American crow (Corvus brachyrhynchos), northern rough-winged swallow (Stelgidopteryx serripennis), European starling (Sturmus vulgaris), song sparrow (Melospiza melodia), house finch (Haemorhous mexicanus), and western brush rabbit (Sylvilagus bachmani). This habitat occurs adjacent to the McGrath Peaker Plant.
- Dune Mats – Some of the species associated with this habitat include sand verbena (Abronia latifolia), silver beachweed (Ambrosia chamissonis), red sand verbena (Abronia maritime), pink sand verbena (Abronia umbellate), yarrow (Achillea millefolium), coyote brush (Baccharis pilularis), yellow bush lupine (upinus arboreus), coastal lotus (Acmispon maritimus var. maritimus), beach bur (Ambrosia chamissonis), big saltbrush (Atriplex lentiformis), beach primrose (Camissoniopsis cheiranthifolia), mock heather (Ericameria ericoides), dune bush lupine (Lupinus chamissonis), common raven (Corvus corax), California ground squirrel (Spermophilus beecheyi), mule deer (Odocoileus hemionus), common side-notched lizard (Uta stansburiana), turkey vulture (Cathartes aura), western gull (Larus occidentalis). This habitat occurs west and north of the project area.
- Mock Heather Scrub – The species associated with this habitat is mock heather scrub (Ericsmeria ericoides). This habitat occurs to the north, east, and to the south.

- Mule Fat Thickets – Some of the species associated with this habitat include mule fat (Baccharis salicifolia), California sagebrush (Artemisia californica), coyote brush (Baccharis pilularis), mugwort (Artemisia douglasiana), dodder (Cuscuta salina), spiny rush (Juncus acutus), Allen's hummingbird (Selaphorus sasin), black phoebe (Sayornis nigricans), American crow (Corvus brachyrhynchos), northern rough-winged swallow (Stelgidopteryx serripennis), mule deer (Odocoileus hemionus). This habitat occurs adjacent to the northern perimeter of the MGSsite, in association with the McGrath ecosystem (AECOM 2015a: 4.2-2 – 4.2-7).

Other Local Fauna

Several animals frequent the coastal strand: western and California gulls (*Larus occidentalis* and *L. californicus*), sand crabs (*Emerita analoga*), razor clams (*Siliqua lucida*), surf and coquina clams, Pismo clams (*Tivela stultorum*), kelp flies (*Fucellia* and *Coelopa* spp.), wrack flies, rove and dune beetles, tiger beetles (Cicindelidae), pill bugs (Isopoda), and beach hoppers (*Orchestoidea californiana*) (CCC 1987:21; Johnson and Snook 1967:282, 441, 458, 460; Schoenherr 1992:635).

Coastal sand dunes and foredunes provided habitat for numerous insects and 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).

Fish, shellfish, and other aquatic animals of 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 (CCC 1987:24).

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).

GEOLOGY

The geology of the project vicinity is described in several sections of the AFC (AECOM 2015a: 4.11.1.1, 4.8.1.5.1, 4.4.1, 4.2.1.1.1), the cultural resources technical study (AECOM 2015c: 3-1 – 3-2), and a geotechnical study conducted in support of the AFC (Ninyo and Moore 2013:4). These discussions are not reproduced in full here, but are summarized for the reader's convenience, followed by a discussion of geological characteristics relevant to this preliminary staff assessment's (PSA's) cultural resources analysis.

The geology of the project site has been defined on the basis of three cone penetration tests (Ninyo & Moore 2013:3), and geologic mapping by the Department of Conservation, California Geological Survey (Gutierrez et al. 2008). The proposed project site is situated on a coastal alluvial plain, with soils consisting of sand and silty sand sediments, with some inter-bedded sandy silt and clay. The deposits are defined as Qe, or Active Coastal Eolian Deposits, and are of Holocene age (AECOM 2015a: 4.8-5). Because the deposits are of Holocene age, they are of the same time period that humans are known to be present on the California coast, suggesting that the deposits have the potential to retain cultural resources.

During the archaeological survey of the proposed gas turbine the archaeologists for the Applicant found several dense concentrations of non-cultural shell, some of which was also found in combination with torn black textiles. Additional research by the Applicant found that this area was used for processing and stockpiling sediments dredged from the Edison Canal. Dredge sediments were pumped via a pipe into a field of "Geotubes", which is the industry name for high-strength, permeable geotextile bags designed to hold such sediments. The area was graded to an unknown depth prior to placing the Geotubes, and a containment ditch was also excavated around the area's perimeter. When the dredged material had sufficiently dewatered, the Geotubes were cut open and the sediments were removed by heavy equipment, placed into dumptrucks, and hauled off-site. It is unknown how deep the dredged material is scattered across the site, but may be up to a foot thick in some locations (AECOM 2015c:4-6).

Geomorphology

The discussion of the geomorphology of the amended 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 is located on the coastal plain of the Transverse Ranges geomorphic province of Southern California. The PAA is on the Oxnard Plain of the Ventura Basin,

which is largely comprised of unconsolidated, Holocene-aged alluvium overlying bedrock. Most of these alluvial sediments were brought to the area by the Santa Clara River to the north, and the rest came from smaller creeks in the Santa Rosa Hills and Santa Monica Mountains. Additionally, eolian dunes are present along the coast, as wind-action has formed these sand dunes (AECOM 2015c:3-1).

20,000–11,000 B.P.

During this time, sea level was markedly lower than today, presenting a wider shoreline than is currently extant in southern California. As a result, many bays and estuaries were far less pronounced than today. (Porcasi et al. 1999:2, Figure 1) The coast was narrow and rocky, backed by 100–150-feet-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. Sea level rise increased wave energy across the continental shelf and flooded the incised valleys that formed from 20,000 to 14,000 B.P. Kelp forests developed near the break of the continental shelf. 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 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 waves. 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 were 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).

PREHISTORIC SETTING

The AFC submitted by the applicant provides an historic context for prehistoric resources primarily based on the work of Wallace (1955) and Warren (1968). This context includes a useful background regarding prehistoric human occupation in Ventura County, and it is used as the basis for this section, supplemented by information from Glassow et al. (2007).

For the purposes of this project, the regional history for the south coastal region presented by Wallace (1955) and expanded on by Warren (1968) is applicable. This chronological sequence identifies four Horizons: Horizon I – Early Man/San Dieguito Tradition (ca. 12,000-8,000 B.P.); Horizon II – Millingstone Period/Encinitas (8,000-5,000 B.P.); Horizon III – Intermediate/Campbell Tradition (5,000- 1,500 B.P.); Horizon IV – Late Prehistoric (ca. 1,500 B.P. - Historic Contact).

Archaeological sites in the region around the proposed P3 have produced some of the earliest dates of human occupation in California. As noted above, the Northern Channel Islands are in close proximity to the Oxnard coast, and were even closer when sea levels were lower in the past. Materials recovered at Arlington Springs on Santa Rosa Island date to ca. 13,000 B.P., and dates from Daisy Cave on San Miguel Island indicate human occupation ca. 10,000 B.P. On the mainland, the earliest date in the area is ca. 10,000-9,500 B.P. from the Surf site near the mouth of the Santa Ynez River (Glassow et al. (2009:191-192). The evidence from this early period (also called the Paleo-Coastal Tradition) is sparse and it is difficult to make many definitive conclusions regarding the economy and social structure of these early Californians, other than that they collected shellfish and made flaked tone tools of local chert.

Around 8,000 B.P. California experienced an extended warm and dry period, often referred to as the Altithermal. This climactic event drastically altered the environmental resources available to prehistoric inhabitants, thus changing their subsistence efforts to focus on the procurement of plant foods supplemented with small animals. Evidence for the focus on plant foods is seen in the prevalence of metates and manos (millingstones) in archaeological deposits of this time period, and this is the earliest widespread archaeologically known occupation. These tools were used to process hard seeds into flour, and this plant-based diet was supplemented with fishing and hunting as well. The typical archaeological assemblage of sites that date to the Millingstone Period consists of millingstones, large and crudely fashioned cobble choppers and scrapers, hammerstones, fire-affected rocks often in association with millingstones, and a paucity of projectile points, other hunting tools, and faunal remains (Glassow et al. 2009:194-195).

Most of the settlements that date to the Millingstone Horizon are at or near the coast, and especially in the Santa Barbara Channel region these sites tend to be located on elevated terraces or knolls. Data from marine sediment cores suggests that sea temperature was cooler than at present which made the productivity of the marine environment higher than it is currently. This increased marine productivity likely permitted groups to live near the coast while still maintaining their subsistence efforts focused on plant foods (AECOM 2015c:3-4; Glassow et al. 2007:194).

The Intermediate Period began ca. 5,000 B.P. and is marked by the transition to a hunting focused subsistence regime. Evidence for this transition is noted in the archaeological assemblages that date to this time period which contain more fish, terrestrial and marine mammal remains than earlier periods. Flaked stone tools from this period are more diverse than preceding periods, and include such tools as large, side notched projectile points, large blades, and flaked scrapers and drills (AECOM 2015c: 3-4). The metates and manos of the earlier Millingstone period were still used but refined mortars and pestles also are found, indicating a reliance on a greater variety of vegetal products, such as acorns, islay, and roots. Mortuary practices during this time period suggest a degree of achieved status differentiation, as evidenced by shell beads and ornaments (Glassow et al. 2007:197-203).

Later in the Intermediate Period technological shifts were made to include circular shell fishhooks, notched stone sinkers or net weights, and contracting stem points. Also during this time advances were made in the use of asphaultum for a variety of products. It is suggested that it was during this time period that the basic aspects of Chumash culture began to emerge, based on a comparison to ethnographic Chumash practices (Erlandson and Rick 2002:181). Sites from this time period evidence increased sedentism as shown by the larger size of sites, high density of artifacts and faunal remains, and floral assemblages which indicate year-round habitation (Glassow et al. 2007:202-203).

The Late Prehistoric Period is marked in particular by the introduction of the plank canoe and bow and arrow. These technological changes are reflected in significant social and political changes for the indigenous people living along the Southern California Coast, as during this time period (ca. 700 B.P.) is the one in which all major aspects of Chumash cultural systems were in place. It is also during this time period that scholars posit that the regional population reached its peak based on the presence of several large settlements along the Santa Barbara mainland coast. The plank canoe, or tomol, was an important development because it permitted groups to obtain large deep sea fish such as tuna and swordfish and to move between the Channel Islands and the coast more efficiently, increasing trade. Archaeological assemblages that date to this time period typically contain a wealth of ornamental, ceremonial and artistic items such as marine shell and stone beads, pendants, ornaments, bowls, pestles, pipes, and stone tubes inlaid with shell beads. Projectile points included both large and small varieties, the smaller, corner –notched Cottonwood series being associated with the use of the bow and arrow (AECOM 2015c:3-5; Glassow et al. 2009:205-209).

ETHNOGRAPHIC SETTING

Chumash

The Chumash people and representative tribes are the Native Americans most directly associated with the proposed project area. Traditionally, the Chumash have been split into six subgroups based on the dialect of the Chumash language spoken and named for the closest Spanish Mission to those groups: those near the Santa Barbara Mission are the Barbareño; those near the Santa Ynez Mission are the Ynezeño; those near La Purisima Concepción are the Purisimeño; those near the San Luis Obispo Mission are the Obispeño; those from the Northern Channel Islands are the Island; and near the

proposed P3 project area, the Ventureño named for the San Buenaventura Mission (Grant 1978a:505).

The Chumash were one of the first groups of California Native Americans that the early European explorers encountered. Juan Rodriguez Cabrillo met the Chumash on October 10, 1542 when he landed on the shores of Ventura. While exploring the mainland, coast, and Channel Islands, Cabrillo noted many of the names of settlements that they encountered. The next time the Chumash had Europeans in their midst was about 60 years later when Sebastian Vizcaino explored the Santa Barbara area. The Chumash impressed their European counterparts with their material culture and craftsmanship, and these explorers cataloged these traits in their journals including information about the appearance and activities of the Native Americans (Grant 1978a: 505).

Prior to European contact and the establishment of the Mission system, Chumash territory extended from the San Luis Obispo area down the coast to Malibu and inland as far as the western edge of the San Joaquin Valley. The name “Chumash” is derived from “*Mi’ chumash*” the name that was used by some mainland groups to refer to those Chumash from the Channel Islands.

The Spanish established the first mission in region in 1772 at San Luis Obispo, and four other missions were built over the next 32 years: San Buenaventura (1782); Santa Barbara (1786); La Purisma Concepción (1787); and Santa Ynez (1804). The recruitment and absorption of the Chumash was relatively quick, and by the early 1800s the entirety of the Chumash population was either in the mission system or had fled to the Central Valley or mountains.

Trade, Settlement Patterns, Economy, Resources and Material Culture

The Chumash were part of an extensive trade network which included the Channel Islands, the mainland coast, and extended all the way into the Great Basin and Southwest. Items traded by the Chumash included steatite, wooden vessels, and beads traded to the Salinans, their neighbors to the north. Inland to Yokuts groups, the Chumash traded white pigment, shell beads, Pismo clam, abalone, olivella, limpet and cowrie shells, and dried sea urchin and starfish, for black pigment, antelope and elk skins, obsidian, salt, beads, seeds, and herbs. The Tubatulabal traded piñion nuts for Chumash asphaltum, shell ornaments, steatite, and fish. The Island Chumash traded chipped implements, fish-bone heads, baskets, and basaltic rock digging weights for seeds, acorns, and bows and arrows. The Kitanemuk received wooden and shell inlaid vessels from the Chumash as well (Davis 1961:29; Grant 1978b: 517).

The most important food source for the Chumash was the acorn. Gathered in the fall, and stored for future use, the acorn was the staple of the Chumash diet for most of the year. Other plant foods included pine nuts, wild cherry, tule, berries, mushrooms, cress, amole, and many different types of seeds. Mollusks were one of the most important maritime subsistence foods, and included the California mussel, the horse clam, the gooseneck barnacle, the jackknife clam, the Pismo clam, and abalone. Marine mammals such as seals, sea otters and porpoises were taken by harpoons from the wood plank canoes or *tomols*. Fish were taken from the sea, using seines and nets or

hook and line for shallow water fish, and harpoons for larger ones. Bows and arrows were used to hunt mule deer, coyote, and fox. Wooden throwing sticks were used to kill rabbits and game birds (Grant 1978b: 517).

The Chumash did not make pottery before the Spanish arrived, relying instead on their well-made baskets and steatite vessels for storage and cooking. Steatite was also used to craft beads, medicine tubes, smoking pipes, whale effigies, and charmstones. Asphaltum was an important resource, used to attach shells to vessels as decoration, to caulk their plank canoes, sealing water baskets, and fastening arrow and spear points to shafts. Both chert and obsidian was used for crafting projectile points and other stone tools (Grant 1978b: 515).

Chumash Burial Practices

The Chumash practiced internment of the dead and typically erected a small board and pole at the grave. Trophies related to the deceased were placed on the board and pole, e.g., hooks and lines if the person was a fisherman, bow and arrow if a hunter. Whale rib bones were laid in some burials; there are reports that the rib bones were either laid across the grave or lined the grave. Bodies were tied in a flex position, and lain with the head facing west and face down. Typical grave goods included bowls, pestles, beads, weapons and charmstones. Sometimes the bowls and mortars were deliberately broken before they were placed in the grave. Some infant burials were uncovered that contained small canoes made of stone, bone or wood.

Lieutenant Fages in 1775 gave a detailed account of the Chumash mourning ceremony:

> When any Indian dies, they carry the body to the adoratory, or place near the village dedicated to their idols. There they celebrate the mortuary ceremony, and watch all the following night, some of tehm gathered about a huge fire until daybreak; then come all the rest (men and women) and four of then begin the ceremony in this wise. One Indian smoking tobacco in a large stone pipe, goes first; he is followed by the other three, all passing thrice around the body; but each time he passes the head, his companions lift the skin with which it is covered, that the priest may blow upon it three mouthfuls of smoke. On arriving at the feet, they all four together stop to sing I know not what manner of laudation. Then come the near and remote relatives of the deceased, each one giving the chief celebrant a string of beads, something over a span in length. Then immediately there is raised a sorrowful outcry and lamentation by all the mourners. When this sort of solemn response is ended, the four ministers take the body, and all the Indians follow them singing to the cemetery (Fages 1937: 33-34 in Grant 1978b: 512).

Sources of Ethnographic Data

The earliest ethnographic sources of information can be found in the records of the Spanish explorers and later missionary records. Various documents related to Spanish exploration and subsequent colonization are available, and include accounts by Cabrillo (Wagner 1929), Vizcaino (Wagner 1929), Fages (1937), Constansó (1911), Crespi (1927), Font (1930), Palóu (1926), Longinos Martinez (1961), Vancouver (Menzies 1924). Modern ethnographies with valuable information include Horne (1981), Gamble (2008), Grant (1978a, 1978b), and McLendon and Johnson (1999).

Contemporary Tribes Entities with Ethnographic Affiliations

Coastal Band of the Chumash Nation

The Coastal Band of Chumash are based out of Santa Barbara and are not yet federally recognized. The tribe holds cultural education workshops, including language and cultural education classes.

Santa Ynez Band of Mission Indians

The Santa Ynez are the only federally recognized Chumash tribe, with a reservation in Santa Barbara County. They maintain a tribal business council with four elected memebers and a tribal chairperson, and tribal members vote on proposals made by the business council. Elections are held every two years. The tribe also has a casino and hotel, and holds an annual pow-wow.

Barbareno/Ventureno Band of Mission Indians

The Barbareno/Ventureno consists of Chumash families from Santa Barbara and Ventura Counties. The tribe is not yet federally recognized. The tribal council consists of a five-member group based out of Ojai.

HISTORIC SETTING

Spanish Period (1769 to 1822)

Father Junipero Serra, along with Gaspar de Portola, the Governor of Baja California, led the initial Spanish expedition into Alta California. The establishment of the mission system was the beginning of the Spanish period (1769 to 1822) and the forced acculturation of native peoples in this area. Ultimately, however, the entry of Spanish missionaries into the coastal region resulted in large-scale destruction of native populations (Cook and Marino 1988). Beginning in 1795 (Ventura 1996), a number of family ranchos were established.

Mission San Buenaventura

Juan Bautista de Anza entered the area now known as Oxnard in 1776. The Mission San Buenaventura was founded by Junipero Serra in 1782 nearby in what is now known as Ventura. The mission was located just north of an existing Chumash village near the Pacific Ocean and by the Ventura River. The Chumash were incorporated into mission life (AECOM 2015c: 2-1). (See ethnographic history earlier in this Appendix). The settlement of the missions by the Spanish also created an overland transportation

route through California, although this route may have been discontinuous and changeable over time.

Mexican Period (1822 to 1848)

The Mexican period followed the Spanish period as Mexico gained its independence from Spain. It was during this time that land began to be granted to private citizens and the missions became secularized. Political responsibility for the region was transferred to the United States with the signing of the Treaty of Guadalupe Hidalgo on February 2, 1848. Land use during this period was characterized by cattle ranching and dry farming (Ventura 1996:9).

Land Grants and Ranchos

In the Ventura County region, a total of nineteen ranchos were granted, two by the previous Spanish government and seventeen by the Mexican government (Ventura 1996:9). Governor Juan Bautista Alvarado awarded the land known as Rancho El Rio de Santa Clara o La Colonia 44,833 acres (covering most of the Oxnard Plain) to eight Mexican soldiers. It is thought that only one of them, Rafael Gonzales, actually lived on the ranch. He had an adobe home located on present-day Gonzales Road (AECOM 2015c; 2-2).

The La Colonia Rancho was bordered by the Ranchos San Miguel, Santa Clara del Norte and Rancho Guadalasca.

American Period (1848 to present)

The Mexican-American War of 1846-1848 ended Mexico's control of Alta California. During this period, both agricultural and oil-producing industries evolved. California became a state in 1850.

European-American Settlement of the Ranchos and

Agriculture in the Santa Clara Valley

Prior to the droughts of the 1860's and 1870's, dry farming of grains, livestock, and tree crops flourished. Dry farming refers to crop production during a dry season, utilizing the residual moisture in the soil from the rainy season, usually in a region that receives 20" or more of annual rainfall. Dry farming works to conserve soil moisture during long dry periods primarily through a system of tillage, surface protection, and the use of drought-resistant varieties (CAWSI 2015). The need for reliable water supplies brought about the creation of water companies that brought water from creeks and rivers and developed wells for both agricultural and community use (Ventura 1996:9).

"Ventura County was noted for its comparative lack of substantial irrigation system development relative to other Southern California regions. On the Oxnard Plain, high groundwater tables and fog reduced the need for substantial irrigation of many crops (Rothrock 1876, as referenced in SFEI 2011:40). In addition, the presence of alkali, coupled with a high groundwater table, impermeable clay subsurface soils, and extremely flat topography actually precluded irrigation over large swaths of the Oxnard Plain, since irrigation water only further saturated surface soils (Gregor 1953 as

referenced in SFEI 2011:40). Early farmers on the Plain understood this, and it was observed that they do not irrigate more than they can avoid, for the reason…it brings the alkali to the surface (Rothrock 1876, as referenced in SFEI 2011:40).

For this reason, substantial crop irrigation lagged behind the development of large-scale agriculture in the county. The main crops of the 1880s—barley and beans, along with corn—were largely dry-farmed in the foggy, high groundwater table areas near the coast" (Thompson and West [1883]1961, Gregor 1952, Swanson 1994 as referenced in SFEI 2011:40).

By 1949, most of the Oxnard Plain was irrigated. This move toward irrigation had created a number of water companies and conservations districts, and construction of several dams and reservoirs. This use of irrigation water allowed for a shift into production of high-value tree crops such as citrus, walnuts and apricots (SFEI 2011:41-42).

The McGrath Family

The McGrath family's entry into local Ventura County agriculture occurred when Dominick McGrath relocated to the area in 1874 (Bodle 1977:2). Originally from Ireland, McGrath had been raising sheep in Alameda County in the San Francisco Bay Area in the 1850's and 1860's. Prior to his relocation to the Oxnard area, he acquired the rights to purchase what would become 1,337 acres from Thomas A. Scott. That purchase was completed in 1875. The main ranch house was completed in 1879 off of Gonzales Road, one mile from the ocean in Oxnard. The McGrath house, formerly located at 5701 Gonzales Road, was recorded by Bissell and is recorded as Ventura County Primary Record Number 56-152738 in the state's historic resources inventory, CHRIS (Bissell 1990). By the time of Dominick McGrath's death in 1908, over 5000 acres had been acquired. Prior to his death, those acres were incorporated into an estate in 1907, the Dominick McGrath Estate Company. The estate passed to four of Dominick's sons: Hugo, Robert, Frank and Joseph. The daughters were to receive shares of stock which could then be sold to the brothers to keep the original holdings intact (Bodle 1977:18). The extent of the estate holdings were described by Bodle as follows: "at one time, you could walk from Montalvo to Hueneme without ever leaving McGrath land" (Bodle 1977:17). The estate holdings were divided by the four sons in 1948 (McGrath 2015).

Sugar Beets and The Oxnard Brothers

Henry and John Oxnard built a sugar beet refinery in Oxnard from 1897 to 1898. The Oxnards had three other factories at other locations and wanted to locate the refinery close to the beet growing area on the Oxnard Plain. The four factories were incorporated under the American Sugar Beet Company name in 1899 (Oxnard 2005:9-10). Sugar beets became the principal cash crop and Oxnard was known for fifty years primarily for its sugar beets and the shipping infrastructure it had developed (Oxnard 2005:14).

City of Oxnard

The Oxnard Townsite was recorded in 1898 and named after the Oxnard Brothers Sugar Beet Factory (Ventura 1996:11). Incorporated in 1903, the town had grown to a population of 1000 residents. The Colonia Improvement Company established a water

system for fire and domestic use. The Ventura County Power Company installed gas pipelines in 1904. The Oxnard Light and Water Company was established in 1905. By 1912, the City of Oxnard had acquired all the water, gas and electric power companies (Oxnard 2005:13). Post World War II, the city's economic base expanded to include military operations in addition to agriculture. By 1970, the population had grown to 71,225. Oxnard continues to grow into the current century: the population in 2010 was 197,899, a 14% increase since 2000, when the population was 170, 358[7]. It is the largest city in Ventura County.

Oxnard was laid out on a grid in 1898, with a plaza at the center. Housing, hotels and commercial buildings were constructed rather quickly, and in some cases, moved in from elsewhere to accommodate the need for housing. The City acquired a Carnegie Library in 1907. The city also was granted the Plaza from the Colonia Improvement Company and landscape architect William David Cook was hired to design the plaza's transition to a park. In 1910, a pagoda was constructed in the park to conceal the irrigation system and was later renovated to be used as a bandstand (Oxnard 2005:13; 28). The pagoda was designed by Alfred J. Priest and built by Thomas H. Carroll. The pagoda was restored in the 1990's. It was designated a County Landmark (Number 17) in 1971.

The Spanish Eclectic style Oxnard Post Office was built in 1939 as part of the Works Progress Administration (WPA). Like many others built during the WPA years, the interior features a mural depicting agriculture, the sugar beet factory and the town. The artist was Daniel Marcus Mendelowitz (Oxnard 2005:14).

The central city changed dramatically over the years as early residential housing stock was replaced with commercial uses. Approximately 500 buildings were demolished in the 1950's, 30 of them in the downtown commercial district. A redevelopment agency was formed in the 1960's. The city lost virtually all of the buildings bounding Plaza Park. A pedestrian mall, typical of the 1970's redevelopment movement throughout the country, was created on A Street between Third and Sixth Streets in 1971. Buildings were removed to provide parking lots. These are through-streets once again.

TRANSPORTATION

Ships and Stagecoaches

Prior to the arrival of the railroads, long distance transportation to and from the region was by ship and stagecoach. Three connecting stagelines transported passengers between Los Angeles and San Francisco (Wlodarski 2010). In 1872-1873, wharves were built at both Point Hueneme and Ventura. A coast route for stagecoaches was in use by 1861 (Ventura 1996:10).

[7] US Census Figures, 2000, 2010.

Railroads

The Transcontinental railroad was completed in 1869, connecting San Francisco to the Eastern United States. Southern California was connected to the national railroad network in 1876 by The Southern Pacific Railroad (SP) and this became the largest driver of growth in this time period. The Atchison, Topeka and Santa Fe (ATSF) completed its line to Los Angeles in 1885 and the two railroads competed with each other to bring passengers to Southern California. In 1887, the SP completed its first line into the Ventura County area (Ventura 1996:10-11). These railroad connections enabled the success of the sugar beet industry and the Oxnard Townsite (Oxnard:11)

Southern Pacific Railroad-Montalvo Branch

Although the SP was completed through the Santa Clara Valley in 1887, it did not reach into Oxnard until 1897-1898 when the Montalvo Branch line was constructed. This line crossed the Santa Clara River on a wooden trestle and provided the way for construction equipment to reach the site of the sugar beet factory. The branch line eventually was expanded to connect to Camarillo, Somis, Moorpark, and Santa Susanna by 1901. The line later connected to Los Angeles by way of a tunnel cut into the Santa Susanna Mountains (AECOM 2015c: 2-8) at the Santa Susanna Pass. This line became the primary route of the SP in 1904. This Montalvo Branch line is in use today by MetroLink as a commuter passenger line.

By 1905, another rail line was built to connect Oxnard to Point Hueneme. The Hueneme line was acquired in 1911 by the American Sugar Beet Company and renamed the Ventura County Railway. Various sidings and extensions were added over time. (AECOM 2015c: 2-8) (Oxnard 2005:11). The American Sugar Beet Company closed its Oxnard refinery in 1958, and the massive brick structure was demolished. This was partially the result of diversification in crops in the region that had occurred over the years. It was also the result of a diversified economy which now included military, food processing and Cold War industries (Oxnard 2005:16).

Oxnard is currently served by Amtrak's Coast Starlight and Pacific Surfliner passenger trains, as well as MetroLink commuter rail from Los Angleles.

Roads and Bridges

El Camino Real/Roosevelt Highway/US Highway 101/State Route 1/ Pacific Coast Highway

The first mission was established in 1769 at San Diego, when they established a fortress and a Franciscan mission. A footpath, called The El Camino Real, or Kings Highway, was created to connect the outposts. Ultimately, El Camino Real linked 21 missions, pueblos and four presidios from San Diego to Sonoma (CAHighway 2014). An article by Nathan Masters (Masters 2013) disputes the notion that the path was a well-traveled road and suggests the path changed over time based upon weather, modes of travel and even tides.

Led by groups like the Auto Club, the California Federation of Woman's Clubs, and the Native Daughters of the Golden West, efforts to develop El Camino Real into a tourist destination highway gained traction in the first decade of the twentieth century. The El

Camino Real Association succeeded in placing more than 400 roadside markers comprised of bells hung on poles along an approximation of the original footpath between 1906 and 1914 (Masters 2013).

The 1910 State Highways Act authorized construction of a paved road along the route of El Camino Real. However, construction lagged and for many years much of the historic road was only a primitive trail. Between cities there were streams to ford and steep grades to scale. Sometimes, teams of horses would rescue automobiles trapped in mud. Finally, by the mid-1920s, the highway construction was complete, and in 1925 the route was signed as US 101 (CAHighway 2014).

Pacific Coast Highway opened in the late 1920s as part of the Roosevelt Highway, a 1,400-mile road that traversed the westernmost United States. Pacific Coast Highway is a road connecting coastal towns from Ventura to San Juan Capistrano, however there are other sections which have adopted the moniker, the most obvious being the segment along the Big Sur coastlines. Passing directly through coastal towns, the Roosevelt Highway—renamed Pacific Coast Highway in much of Southern California in 1941 -- adequately met the region's transportation needs in 1929 (Masters 2012).

In 1929, the Roosevelt Highway, what we now know as State Highway 1, opened between Santa Monica and Oxnard (Ventura 1996:13). It ran through the heart of Oxnard on the main north-south arterial, Saviers Road. At that time, it was renamed Oxnard Boulevard. The highway was designated as State Route 1 in 1964 (Oxnard 2005:14).

McGrath/Harbor Boulevard

As shown in a 1951 USGS topo map McGrath Boulevard (Road) originally extended from West Fifth Street south to what would be Oxnard Boulevard today. It shown on earlier maps but is unnamed. As of 1951, Harbor Boulevard north of west Fifth Street is non-existent. What is now known as Harbor Boulevard first appears in 1959 on an aerial image, where it can be seen crossing the newly constructed Edison Canal adjacent to MGS. It would appear to be contemporaneous with the construction of the MGS power plant.

STEAM GENERATION ELECTRIC PLANTS IN CALIFORNIA

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. This "central station" concept was to become the cornerstone of the electric utility industry (Myers 1983:11).

Hydroelectric power was the dominant form of electric generation in California in 1920. By 1940, it grew to 89 percent of the market in California. However, by 1960, steam generating plants became the primary source of electricity in California as hydroelectric generation had fallen to steam plants as they less-costly and closer to load centers. (JRP 2014:5-6).

Power generating plants constructed before World War II were typically housed in an architectural shell with a recognizable style of design. In the early part of the twentieth century, this was partly an outgrowth of the City Beautiful Movement. San Diego Consolidated Gas & Electric Company's Station B (1911) and Sacramento's PG&E Station A are examples of this early beaux arts-based Classical Revival presentation of an edifice housing the turbines, generators and various facilities of a steam generating electric plant. The original Pacific Light and Power Company steam plant at Redondo Beach, constructed in 1906, was also emblematic of the Classical Revival style. All of these featured arched fenestration, distinct cornice details, rhythmic patterns of windows, columns or piers and spacious interior volumes housing the equipment.

Later examples adopted the architectural style of their times. The City of Vernon's Station A, built in 1932, is an excellent example of the Art Deco style of architecture popular at the time, especially in Southern California. A later addition to San Diego's Classical Revival style Station B (1928-1939) was constructed in the Spanish Revival and Art Deco styles.

Post World War II, power plant design in Southern California transitioned to largely outdoor turbines and generating equipment, with few plants being constructed within a shell. Encina Power Station in Carlsbad is an exception to that, as are portions of Redondo Beach Generating Station Plant 1, built in the Art Moderne style.

Southern California Edison

The Edison Electric Company reincorporated as the Southern California Edison Company in 1909. In 1917, SCE purchased the Pacific Light & Power Corporation from Henry Huntington, which was operating the Big Creek Hydroelectric plant in the Sierra Nevada, and the Redondo Beach Steam Station, originally built at the current RBGS site in 1906-1907. Big Creek was the primary source of electricity for Southern California until the post-war years. On the heels of the end of WWII, SCE constructed and updated numerous power plants to meet the expansion of industry and residential development in the area it served.

Post-War (WWII) Electric Power Generation in California

After World War II, steam-generated electricity underwent a significant expansion. Beginning in 1948, with the construction of Redondo Beach Steam Station, and over the ensuing several decades, ten new multiple-unit oil and gas-fired power plants came on line at coastal and inland sites in Southern California. Seven of these were Edison projects and three were Calelectric (California Electric Power Company) projects. (Myers 1983:208–209.) Calelectric's system was merged into Edison's on January 1, 1964 (Myers 1983:205).

The pent-up demand for electricity and electrical appliances after World War II sent utility companies scurrying for capacity. Usage jumped 14 percent between 1946 and 1947, but power firms could not get enough equipment to meet demand as labor troubles at manufacturers and reconversion to a peace-time economy stalled deliveries. But as the immediate post-war constraints alleviated themselves, the growth rate slowed to about 8 percent per year nationally from between 1947 and 1973. At this rate, utilities doubled the amount of electricity sold every nine to ten years. (Hirsh 2002.)

As noted in the previous subsection ("Southern California Edison Company"), SCE expanded and built many plants in the post-war years to accommodate the demand for electricity. The following plants were built in rapid-fire succession in Southern California: Etiwanda (1951), Redondo Beach Plant No. 2 (1952), El Segundo (1955), and Alamitos (1955). New units were added to all of these plants in the ensuing years into the mid-sixties. (JRP 2013:9.)

These new units constructed in the fifties and sixties were very similar to each other in design (JRP 2013:9). They evidenced that a transition had been made from indoor steam generating plants, with the components housed in architectural shells, to largely outdoor facilities generally lacking architectural merit or pretense. This is particularly evident at El Segundo Energy Center (ESEC), Etiwanda, Alamitos, and Huntington Beach. This is less evident at Redondo Beach, where the original 1948 Plant 1, housed in an architectural shell in a defined style (Art Moderne) based on pre-World War II standards, transitioned to the later Plants 2 and 3 with less architectural embellishment and more open construction.

Mandalay Generating Station

Constructed by Bechtel Corporation from 1956 to 1959, Mandalay Generating Station was built by SCE as part of its 10-year plan to double its generating capacity to meet Post-WW2 demands. The MGS was located on the old Patterson Ranch subdivision, a ranch once part of the Dominick McGrath Estate Company holdings (See Cultural Resources Appendix 2 for more detailed information on the McGrath Family). The Edison Canal was constructed to provide ocean water as cooling water for Units 1 and 2. Oil was delivered via tankers and connected to an offshore pipeline for distribution to storage tanks. Unit 1 came online in May, 1959.

MGS represents the typical designs of SCE's power plants in the Post-WW2 years. It is comprised of two primary operating units using natural gas. These are two outdoor steam turbine units sharing a single exhaust stack. A third power generation unit (Unit 3) was added in 1970 employing a jet-engine (gas combustion turbine unit).Units 1 and 2 are interconnected to the adjacent SCE 220-kV switchyard, which serves the Moorpark area. Unit 3 is connected to the nearby SCE 66-kV switchyard, and provides power to the local area (AECOM 2015a:2-2).

A desalination plant was part of the original design of MGS due to the poor quality of local water sources. It went online in December, 1959 and produced high-quality distilled water for use at the plant. The desalination unit, a pilot research project, was later removed and moved to Catalina Island to help with a growing water shortage (Leitner 2012). SCE sold the MGS in 1998 to what is now known as NRG (AECOM 2015b: 2-5).

Edison Canal/Channel Islands Marina/Channel Islands Harbor Residential (1968)

Channel Islands Harbor celebrated its 50th anniversary in 2015. The following historical narrative is quoted directly from their website:

"50 years have passed since the official opening of Channel Islands Harbor in 1965. What started as a sand collection point to solve erosion problems to the south became

a harbor hosting thousands of boaters, residents, and visitors. The beginning of the story is outlined here.

In 1939 there was great celebration in western Ventura County with the opening of the Port of Hueneme. The Port provided a new opportunity for trade and jobs. What was not known at the time was that the northern jetty at the Port sent the sand that flowed naturally along the coast into a submarine canyon just off the Port. As a result, sand no longer replenished the beaches south of Port Hueneme, erosion occurred quickly. The City of Port Hueneme and the adjacent naval base experienced flooding, and even loss of structures. By this time the federal government had taken over the Port as part of the World War II Pacific front. In order to address the erosion issue, Congress requested a study from the U.S. Army Corps of Engineers with the goal of identifying a solution.

The report from the Chief of Engineers recommended that a sand trap be located at what is now the entrance to Channel Islands Harbor. The development of the breakwater and jetty structure required to build the sand trap created a perfect opportunity for a harbor along the coast. A deal was struck between the County and two longtime landowners, the McGrath and Bard families, for a combination donation and purchase of land where the Harbor now sits. The federal government built the entrance structure to create the sand trap. The County funded the dredging of Channel Islands Harbor and the revetment, or sea walls, to keep the water areas open.

Construction for the new harbor didn't begin until 1959, and was completed in about 1963. In the meantime, the County began construction of the initial Harbor area. From that point forward, every two years, the Army Corps of Engineers moved sand from the sand trap at the southern end of Hollywood Beach to Hueneme Beach. Beginning there, the sand began its natural progression south, enriching the Navy base, Ormond Beach, and Mugu Naval Air Station" (Channel Islands Harbor 2015).

The canal was constructed concurrently with the Mandalay Generating Station to provide the station with cooling water. The canal originally extended as far south as Port Hueneme. The course of the canal was altered (to its current alignment) to accommodate the construction of the Channel Islands Harbor (AECOM 2015, DPR523 Edison Canal, page 4 of 11).The AFC also describes the Edison Canal in the Biological Resources section (AECOM 2015a:.2-8 to 9). It characterizes it as a Water of the US and would be considered a streambed for CDFW regulations. The AFC goes on to describe the water source for the Edison Canal as the Pacific Ocean and states that no natural freshwater inputs enter the canal. They further state that the canal conveys stormwater and nuisance runoff from adjacent developments.

Staff observed portions of the canal on a site visit on June 26, 2015. The Edison Canal is connected to the Channel Islands Harbor at the northern reach of the harbor and extends north to the MGS. The canal is largely riparian in nature, with vegetation on both sides. It is not known exactly what form the sides and bottom have taken over the years. It was originally constructed with earthen banks with a trapezoidal cross-section. Portions of the canal located west of the Harbor Drive overcrossing and closer to the intake point for MGS reveal a canal with less vegetation and a more manicured treatment of the canal's side structures.

McGrath State Beach

McGrath State Beach is located north of the MGS and P3 project site between harbor Boulevard and the Pacific Ocean. McGrath State Beach was founded in 1962 and accomplished build-out in 1964. It consists of a campground with 174 campsites, three restroom/shower facilities and a small amphitheater. The campsites are laid out in a series of circles, ranging from eight to ten sites per circle. The road into the campground enters from Harbor Boulevard, curving to the north and approaches an entry kiosk. After passing the entry kiosk, the road leads to the campground, a utility area or a sanitary dump station for travel trailers and recreational vehicles. Dense vegetation screens the campground from Harbor Boulevard. The vegetation planted in the campground circles also provides some screening. There is no day use access or group camping facilities at the State Beach.

The State of California acquired 295 acres from Rita S. McGrath in 1961. This formed the basis for McGrath State Park, which was re- classified as a State Beach in 1962. The acquisition included easements for Hugo McGrath and Associates to breach the sandbar between the ocean and the embayment for the purposes of protecting adjacent agricultural lands. A second easement allows for Hugo McGrath and Associates to manage the water level in McGrath Lake. This cooperative agreement exists today. (MSB GP 1979; Cox 2015). A complete description and historic evaluation of McGrath State Beach and its significance in mid-century state beach acquisitions and designs in California is in **Cultural Resources Appendix CR-2**.

Mandalay State Park

Mandalay State Park was acquired by the state of California in 1985 (AECOM 2015c:.2-10). The 94 acre park is a devoid of much human manipulation and is largely preserved in its natural state, with the exception of several operating oil wells. It is a preserve for dunes, wildlife, plants and wetlands. It has been managed at various times by both the County of Ventura and the State of California's Department of Parks and Recreation. It is currently managed by the Ventura office of California Parks and Recreation. Access to the public beach is from adjacent side streets, as there is no direct access to the preserved areas. Staff observed remnants of the old "Beach Road" seen on historical maps and aerials while visiting the site on June 26, 2015.

BACKGROUND RESEARCH

The following tables, A-1 through A-7, represent the information and sources staff consulted in the course of conducting its independent analysis.

Cultural Resources Table A1
Literature Review Results within 1 Mile of P3

SCCIC Report Number	Title	Author	Affiliation	Date	Proximity to P3 PAA	Resources Identified
VN-00009	Proposed Widening of Harbor Boulevard from West Fifth Street to Channel Island Boulevard	Browne, Robert O.	Ventura County Archaeological Society	1973	Outside	None
VN-00236	Final Report: Onshore Cultural Resources Assessment, Union Oil Company Platform Gina and Platform Gilda Project, Ventura County, California	Horne, Stephen	Dames & Moore	1980	Within	12
VN-00385	Archaeological Monitoring Report: Union Oil Company Platform Gina and Platform Gilda Project, Ventura County, California	Wlodarski, Robert J.	Historical Environmental Archaeological Research Team	1981	Within	None
VN-00398	Archaeological Monitoring Report for the Proposed Location of an 8 Montalvo Pipeline, Along Harbor Boulevard, Ventura County, California	Wlodarski, Robert J.	Historical Environmental Archaeological Research Team	1981	Within	None
VN-00414	An Archival and Background Cultural Resource Research Study for the Proposed Mandalay Beach Park, Ventura County, California	Wlodarski, Robert J.	Pence Archaeological Consulting	1982	Outside	1
VN-00621	An	Lopez,	Robert Lopez	1986	Within	None

	Archaeological Reconnaissance of Portions of the Area Proposed for Mandalay State Beach Recreation Park, Oxnard, Ventura County	Robert	Archaeological Consulting			
VN-00976	Cultural Resources Survey and Impact Assessment for the Proposed Realignment of the Doris Drain in the City of Oxnard, Ventura County, California	Singer, Clay A., and John E. Atwood	C.A. Singer & Associates, Inc.	1990	Outside	None
VN-00989	Cultural Resources Reconnaissance of Four Possible Sites for California State University, Ventura Campus in Oxnard and Ventura, Ventura County, California	Bissell, Ronald M.	RMW Paleo Associates, Inc.	1990	Outside	
VN-01475	Cultural Resource Survey for McGrath State Beach	Hines, Philip and Jan Timbrook	California Department of Parks and Recreation	1986	Outside	None
VN-01509	Ventura Marina Dredging Project	Sturm, Bradley L.	Army Corps of Engineers, Los Angeles District	1985	Within	None
VN-01660	Phase I Archaeological Survey and Cultural Resources Assessment for the North Shore at Mandalay Bay Study Area, Ventura County, California	Simon, Joseph M.	W & S Consultants	1997	Outside	1

VN-01733 (duplicate report of VN-01509)	Ventura Marina Dredging Project	Sturm, Bradley L.	Army Corps of Engineers, Los Angeles District	1985	Within	None
VN-02011	Phase I Archaeological Survey for the Coastal Zone/Soil Transfer Program Study Area, Coastal Berry Ranch, Ventura County, California	Unknown	W & S Consultants	2000	Outside	None
VN-02014	Phase II Test Excavation and Determination of Significance of a Portion of CA-VEN-667, Oxnard, Ventura County, California	Whitely, David S. and Joseph Simms	W & S Consultants	1998	Outside	1
VN-02474	Request for SHPO Review of FCC Undertaking; Project Identifier: 5th & Harbor/CA-7306c; Project Address: On an Existing Transmission Tower Adjacent to Harbor Boulevard North of 5th Street, Oxnard, Ventura County, California	Thal, Sean	EarthTouch, Inc.	2005	Outside	None
VN-02809	A Phase I Archaeological Study Lots 1-12, of Map 5063 Located Northeast of the Intersection of Reef Way and Harbor Boulevard, City of Oxnard, County of Ventura, California	Wlodarski, Robert J.	Historical Environmental Archaeological Research Team	2010	Outside	None

VN-02901	Cultural Resources Records Search, Site Visit Results, and Direct APE Historic Architecture Assessment for Clearwater Candidate CA-VT-0119A (Mandalay-Santa Clara North Harbor Boulevard	Bonner, Wayne, Sarah Williams and Kathleen Crawford	Michael Brandman Associates	2010	Outside	None
VN-02974	Archaeological Resource Study: Morro Bay to Mexican Border	Pierson, Larry J., Gerald Shiner, and Richard A. Siater	PS Associates	1987	Outside	None
VN-02978	Groundwater Recovery Enhancement and Treatment Program: Cultural Resources Inventory Report	Sharpe, Jim and Lori Durio	CH2MHill	2004	Outside	25
VN-03138	McGrath State Beach – Sewer Force Main and Sewer Lift Station Replacement and Wet Well Conversion	Greenway, Brendon	California Department of Parks and Recreation	2012	Outside	

Cultural Resources Table A2
Literature Review Results: Previously Recorded Cultural Resources

Resource Identifier	Site Components	Date Recorded/Updated	NRHP/CRHR Eligibility	Location relative to P3
P-56-000667/CA-VEN-000667	Shell lenses and artifacts eroding from sand dunes; Unconfirmed reports of burial	1979/1997 update	Not evaluated	Approximately 0.3 miles southeast
P-56-001234/CA-VEN-001234	Unsubstantiated Chumash ethnographic *Juncus* spp. collection area	1979	Not evaluated	Approximately 0.2 miles southeast
P-56-001807/CA-VEN-001807	2 lithic flakes, 1 piece of groundstone, 1ceramic sherd with red slip, 2 pieces of glass insulator fragments	2010	Not evaluated	Less than 0.1 miles east
P-56-153002	Transmission tower built in 1958	2010	Recommended not eligible	Less than 0.1 miles east
P-56-152738	Historic McGrath ranch structure	1991	Recommended as not significant (Bissell 1990: 10)	Approximately 0.75 miles northeast

Cultural Resources Table A3
Historic and Aerial Maps Consulted

Map Name	Scale	Survey Date	Reference
Camarillo	1:62,500	1904	AECOM 2015c: Table 1
Hueneme	1:62,500	1904	AECOM 2015c: Table 1
Southern California Sheet 3	1:250,000	1910	AECOM 2015c: Table 1
Hueneme	1:50,000	1947	AECOM 2015c: Table 1
Oxnard	1:24,000	1949	AECOM 2015c: Table 1
Oxnard	1:24,000	1951	AECOM 2015c: Table 1
Oxnard	1:24,000	1956	AECOM 2015c: Table 1
Oxnard	1:24,000	1967	AECOM 2015c: Table 1
Aerial Overview		1947	AECOM 2015c: Table 2
Aerial Overview		1953	AECOM 2015c: Table 2
Aerial Overview		1959	AECOM 2015c: Table 2
Aerial Overview		1967	AECOM 2015c: Table 2
Aerial Overview		1977	AECOM 2015c: Table 2
Aerial Overview		1984	AECOM 2015c: Table 2
Aerial Overview		1994	AECOM 2015c: Table 2
Aerial Overview		2005	AECOM 2015c: Table 2

Map Name	Scale	Survey Date	Reference
Aerial Overview		2009	AECOM 2015c: Table 2
Aerial Overview		2010	AECOM 2015c: Table 2
Aerial Overview		2012	AECOM 2015c: Table 2

Cultural Resources Table A4
Built Environment
Properties of Historic Age in the Half-Mile PAA (Excluding MGS)

Description	Year Built	Surveyed	Evaluated/Eligible	Citation
Mandalay to Santa Clara Transmission Line (P-56-153002)	ca. 1958	Partially	Partially/No	AECOM 2015c
SCE Switchyard	ca. 1959	Yes	Yes/No	AECOM 2015c
SCE Substation	1958	Yes	Yes/No	AECOM 2015c
Jeep Trail Tank Farm	1954-1959	Yes	Yes/No	AECOM 2015c
Edison Canal	1957-1959	Partially	Partially/No	AECOM 2015c
McGrath State Beach/Campground	1962	No	Yes/No	Mourkas 2015

Cultural Resources Table A5
Mandalay Generating Station
Inventory of Built Environment Resources

Structures	Year Built	Surveyed	Evaluated	Citation
Unit 1-Steam	1959	Yes	Yes	AECOM 2015c
Unit 2-Steam	1959	Yes	Yes	AECOM 2015c
Unit 3-Gas Turbine	1970	Yes	Yes	AECOM 2015c
Maintenance Building	1959	Yes	Yes	AECOM 2015c
Administration Building	1959	Yes	Yes	AECOM 2015c
Outfall	ca. 1959	No	No	
Edison Canal	1957-1959	Partially	Partially	AECOM 2015c

Cultural Resources Table A6
Built Environment
Identified Historic Resources – City of Oxnard and Ventura County in the Vicinity of the Project

Name	Location	Description	Year	Eligibility	Survey or Listing Year
Henry T. Oxnard National Historic District	F Street and G Street, Oxnard	Craftsman Bungalows and Period Revival Residences	1991 to 1920's	NRHP	1999
Carnegie Library	5th & C Street, Oxnard	Greek Revival	1906-1923	NRHP/Ventura County Landmark #13	1971
Olivas Adobe	4200 Olivos Park Drive, Ventura	Monterey Style Adobe	1847	CRHR #115/NRHP	1979
First Church of Christ Scientist	Heritage Square, Oxnard	Mission Revival	1906-1908	Ventura County Landmark #70	1982
Justin Petit Ranch House	Heritage Square, Oxnard	Queen Anne	1896	Ventura County Landmark #100	1986
Perkins/Claberg House	Heritage Square, Oxnard	Queen Anne/Stick	1187	Ventura County Landmark #145	1992
Plaza Park Pagoda	Oxnard	Japanese Influence	1910	Ventura County Landmark #17	1971
Mission San Buenaventura; Aqueduct; Reservoir	Ventura	Spanish Colonial or Mission	1782-1809	NRHP/CRHR 114;310	1975

Cultural Resources Table A7
Summary of Cumulative Projects—Archaeological Resources

Project Title	Location	Project Description	Resources Affected/Level of Significance	References
Teal Club Specific Plan	Large undeveloped area on the southeast corner of Doris Ave and N Patterson Rd	990 residential units of varying density, single-family, townhomes, condominium, and apartment units; 21 ac. community park; 8 ac. school site; 60,000 s.f. mixed use and retail; 132,000 s.f. business research park; 1 ac. fire station site.	As-yet-unidentified/ LTSWM	OPD 2015a
Channel Islands Business Center	1425 Mariner Drive Oxnard, CA 93033	Construct 90,414 square foot speculative industrial building.	As-yet-unidentified/ LTSWM	OPD 2011
Coastal Apartment Homes and Coastal Senior/Assisted Living	North corner of Butler Rd and E Pleasant Valley Rd	Construction of approximately 101 apartments and 70 unit senior living units	14 historic trees/LTSWM	OPD 2015b
Santa Clara River Levee Improvements Downstream of Union Pacific Railroad (SCR-3) Project	N Ventura Rd, North of W Vineyard Ave	The project would implement structural improvements to the existing SCR-3 levee to allow for FEMA certification. Between Bailard Landfill and N. Ventura Rd. (reaches 1-3) two options and considered. Option 1A (Full Levee System) adds fill material and riprap to raise the existing levee (8,875 feet) with one tie-in to Bailard Landfill. Option 1B (Minimum Levee System) adds fill material along a portion of the existing levee (3,575 feet), with tie-ins to Bailard, Coastal, and Santa Clara Landfills. The existing River Ridge Golf Course swale would be filled in. Between N. Ventura Rd. and the UPRR bridge (Reach 4), a 950-foot long floodwall would be constructed on the river side of the road with a visible height of 6 feet; a	As-yet unidentified/LT SWM	VCWPD 2015

Project Title	Location	Project Description	Resources Affected/Level of Significance	References
		flood gate would be installed across N. Ventura Rd. and then a 4- to 6-foot floodwall would be constructed on the south side of N. Ventura Rd. for 860 feet.		
North Pleasant Valley (NPV) Treatment Facility	Las Posas Road/Lewis Road, Camarillo	Recirculation Construction and operation of a groundwater treatment facility, including the drilling and production of two new wells, installation of pipelines necessary for distribution of raw well water, product water and brine. The proposed facility would provide treated water to the City's existing service area, with an average design capacity of 7,500 acre feet year of production water. Treatment would include filtration, reverse osmosis and disinfection. Brine generated by treatment would be discharged to the Calleguas Regional Salinity Management Pipeline, located along Lewis Road.	As-yet unidentified/LTSWM	Padre Associates 2014
Moorpark Newbury 66 kV Subtransmission Line Project	E Los Angeles Ave & W Los Angeles Ave & Gabbert Rd Moorpark, CA 93021	Southern California Edison (SCE) proposes to construct a new 66 kV subtransmission line an related facilities within a portion of SCE's existing Moorpark-Ormond Beach 220 kV Transmission Line right-of-way (ROW) and a portion of SCE's Moorpark-Newbury-Pharmacy 66 kV	CA-VEN-1797/LTSWM	ESA 2015

Project Title	Location	Project Description	Resources Affected/Level of Significance	References
		Subtransmission Line ROW. The new subtransmission line would be constructed between SCE's Moorpark Substation and Newbury Substation and includes construction of 1,200 ft. of underground line, 5 miles of new 66 kV line, 2 miles of new 66 kV line within the Moorpark-Newbury-Pharmacy 66 kV subtransmission line, and 1 mile of the new 66 kV subtransmission line into Newbury Substation.		
RiverPark Senior	SE Corner of Ventura Rd. & Clyde River Dr	Develop a 166,000 square-foot, 136-unit senior living facility	As-yet unidentified/LT SWM	ISI 2011
Olivas Park Drive Extension Project	Between Golf Course Drive and Johnson Drive, Ventura	Extension of Olivas Park Drive as a four-lane Secondary Arterial between Golf Course Drive and Auto Center Drive; (2) a levee/floodwall that is approximately 5,400 linear feet in length along the north side of the Santa Clara River that terminates 350 feet south of the Southern Pacific Railroad; (3) General Plan amendments for land use changes for parcels within the 110.83139-acre project boundary, (4) a Specific Plan amendment to revise the boundaries of the Auto Center Specific Plan; and (5) zone changes for amendment to revise the boundaries of the Auto Center Specific Plan; and (5) zone changes for parcels within the project boundaries. The proposed project also includes a pre-zone and annexation of one County parcel. The proposed zoning and land use amendments could accommodate a maximum	As-yet unidentified/LT SWM	Rincon 2014

Project Title	Location	Project Description	Resources Affected/Level of Significance	References
		of 1,258,000 square feet of commercial development and 75,000 square feet of industrial development. The proposed roadway extension will transition to join the existing improvements at the Johnson Drive/U.S. 101 southbound ramps interchange. No improvements other than the transition are proposed as part of this project at the Johnson Drive/U.S. 101 interchange. Additionally, the Montalvo Community Services District (MCSD) would abandon and remove the existing wastewater treatment plant components of the MCSD, and the wastewater treated at this facility would be diverted to the City's wastewater facility.		

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CULTURAL RESOURCES APPENDIX CR-2

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HISTORICAL RESOURCE EVALUATION OF THE MCGRATH STATE BEACH OXNARD, CALIFORNIA

ABSTRACT

NRG is proposing to decommission and demolish the existing Mandalay Generating Station (MGS) Units 1 and 2 in Oxnard, California, and construct a new gas-fired electric power plant to eliminate the use of once-through ocean cooling water in the electric power generation process. The new power generating facility would be the Puente Power Project (P3) and would be located on the northern portion of the existing MGS property. McGrath State Beach is located north of the proposed new power plant and the existing MGS and falls within the Historical Built Environment study area of the Project Area of Analysis (PAA). The PAA is defined as a one-half mile buffer surrounding the project in rural areas [Cal. Code Regs., tit. 20, §1704[b][2], Appendix B[g][C].

To comply with various regulatory requirements, Energy Commission staff evaluated the historical significance of the McGrath State Beach and assessed its eligibility for inclusion on the California Register of Historical Resources (CRHR).

This investigation concludes that, as evaluated for significance under Criteria 1-4 of the CRHR, McGrath State Beach does not appear to be eligible for listing on the CRHR as a built environment historical resource.

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1.0 DESCRIPTION OF THE RESOURCE
2.0 HISTORIC CONTEXT
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1.0 DESCRIPTION OF THE RESOURCE

McGrath State beach is situated on 295 acres that the State of California acquired from Rita S. McGrath in 1961. This acquisition formed the basis for McGrath State Park, which was re-classified as a State Beach in 1962. McGrath State Beach is located on North Harbor Boulevard in Oxnard, Ventura County, California. The Assessor's Parcel Number is 138008006-5. The acquisition included easements for Hugo McGrath and Associates to breach the sandbar between the ocean and the Santa Clara River embayment for the purposes of protecting adjacent agricultural lands. A second easement allows for Hugo McGrath and Associates (now known as Coastal Berry Farms) to manage the water level in McGrath Lake. This cooperative agreement still exists today (MSB GP1979:4; Cox 2015).

McGrath State Beach is a unit of the State of California Department of Parks and Recreation (Parks). McGrath State Beach was founded in 1962 and build-out was completed in 1964. It consists of a campground with 174 single family campsites, a group camp, a hike/bike camping area, three restroom/shower facilities, a day use parking lot, and a small amphitheater. Undeveloped areas include natural sand dunes, sandy beach, the Santa Clara River Estuary Nature Preserve, and the back dune McGrath Lake. The single family campsites are laid out in a series of circles, ranging from eight to ten sites per circle. The road into the campground enters from Harbor Boulevard, curving to the north and approaches an entry kiosk. After passing the entry kiosk, the road leads in one direction to the campground, and in another direction to a day use parking lot, a utility area and a sanitary dump station for travel trailers and recreational vehicles. Dense vegetation screens the campground from Harbor Boulevard. The vegetation planted in the campground circles also provides some screening between sites.

The campground was never expanded to the 338 campsites originally designed and depicted in the 1962 plans (see **Cultural Resources Appendix CR-2 Figure 5**). The 1962 plans envisioned a sizeable day use area, which was also never realized. The state beach and campground today have undergone little change since 1964. No improvements to the facility appear to have been made. The restroom facilities are constructed of a light brown rectangular concrete block typical of the era with stucco wall accents. The stucco-clad walls feature evenly-spaced vertical wooden trim pieces, giving the stucco walls a paneled look. The concrete block walls flank each end of the front elevation and mask the entrance to both women's and men's restrooms. The hipped roof has exposed rafter tails. The restroom buildings have a central monitor-type roof vent, providing ventilation for the restroom and shower facilities. The restroom buildings have integrated raised plant beds flanking the central service door. These are constructed of the same rectangular concrete blocks that flank each end of the façade (**Cultural Resources Appendix CR-2 Figure 1**).

The amphitheater has eight rows of wooden benches, bisected by a center access aisle. A large wooden cabinet that houses a projection screen is at the front of the amphitheater. It is flanked by two electrical utility boxes. Scattered wooden picnic tables are off to the left of the rows of bench seats. A center wooden console provides a location for a screen projector or other video equipment. The amphitheater is loosely enclosed by a non-continuous perimeter of *Myroporum laetum* trees. The amphitheater is located adjacent to the restroom building in the campsite Group 2, centered in the campground. A series of interpretative panels line a pathway abutting the amphitheater (**Cultural Resources Appendix CR-2 Figure 1)**.

The campsites are arranged in three groups of six circles, with 8-10 sites each, much like spokes in a wheel or pinwheels. It is a distinctive pattern, especially when seen in plain view or in aerial imagery (See **Cultural Resources Appendix CR-2 Figures 5, 6** and **8**). Each site has an asphalt driveway, a wooden picnic table and a fire ring (see **Cultural Resources Appendix CR-2 Figure 2**). They are all single, vehicular back-in sites: there are no pull-through sites for larger recreational vehicles or fifth-wheel

trailers, although the back-in sites are long enough to accommodate larger vehicles and trailers. Some circles have more vegetative screening between sites than others. Each group has its own restroom facility. There are no electrical, water or sewer hookups. The campground has been frequently closed in recent years. Seasonal flooding from the Santa Clara River inundates portions of the campground, the utility area and sanitary sewage dump area. Flooding occurs mostly when a sandbar blocks the flow of the Santa Clara River to the ocean, its natural outlet. This closing of the embayment occurs when river flow is not strong enough to breach the sandbar naturally, generally during the drier times of the year. While upstream flows are reduced in the summer dry season (the approximately 84 mile long Santa Clara River originates in the San Gabriel Mountains), year-round flows from local agricultural irrigation runoff and treated wastewater continue to enter into the river channel and, consequently, the embayment. The closures have created a challenge for Parks in terms of maintenance of the facility. The most obvious signs of a lack of use are the overgrown grasses, small shrubs and weeds invading the campsites and growing through the cracks in the roads and parking areas. It is not clear when, or if, the campground will reopen (Cox 2015).

The original plantings are not shown on available historical plans, but it is likely that the *Myoporum laetum* shrubs in existence in the campground were part of the screening plantings. They appear to be very old, reaching mature heights of 9'-30'. *Myoporum laetum* is listed as a weedy, invasive species by the California Invasive Plant Inventory (CAL-IPC 2015). According to Parks staff, the myoporum are not thriving as a result of repeated seasonal flooding. Parks staff mentioned that wetland species of plants are beginning to take hold in areas of the campground which have been subject to flooding (Cox 2015). The 1979 General Plan also identifies Hottentot Fig (*Carpobrotus edulis*) as being present in dense stands in the center islands of each campsite circle (MSB 1979:14). Hottentot Fig is more commonly known in California as Iceplant and was planted in the past along freeway embankments and on sand dunes and bluffs. Iceplant is also listed as a weedy, invasive species by the California Invasive Plant Inventory (CAL-IPC 2015) and it is rarely used today. Parks staff identified areas in the sand dune areas of the state beach where the Iceplant is being systematically eliminated and native sand dune plant species, such as Red Sand Verbena (*Abronia martima*) are reappearing (see **Cultural Resources Appendix CR-2 Figure 3**).

The state beach also features within its borders McGrath Lake. McGrath Lake is largely fed by upstream irrigation runoff. The level is maintained by the use of an onsite pump. The lake is also covered by the deed restriction (easement) allowing Hugo McGrath and Associates (now known as Coastal Berry Farms) to operate the pump in order to maintain water levels. The water is drained to the beach through an underground pipe under the dunes. On the day of the site visit, Parks staff showed Energy Commission staff the location of the outlet to the outflow pipe and noted that he had never seen it dry before (Cox 2015). This is an indication of the drought conditions that existed in Southern California in 2015.

There is an oil producing field adjacent to the eastern boundary of the property, situated generally between McGrath Lake and the dunes to the west and to Harbor Boulevard to the east. The McGrath State Beach parcel partially envelops the oil producing field, giving it the feel of an inholding (**Cultural Resources Appendix CR-2 Figure 3**). It is

assumed this has been operational as long as the state beach has been in existence. Standard Oil discovered oil in the area in 1947. The balance of the property is undeveloped and consists of naturally occurring sand dunes and beaches, and the riparian environment along the banks of the Santa Clara River.

To the south of the state beach is Mandalay Generating Station (MGS) and the site of the proposed Puente Power Project. Mandalay Generating Station was constructed between 1956 and 1959, and pre-dates the establishment of the state beach by a few years. MGS is visible from campsites in Group 1, particularly sites 45-48. On the day of the site visit, it appeared on the horizon as a boxy shadow and a stack with a visible plume. The oil production facilities are also visible from this vantage point. Views of MGS from other parts of the campground are largely screened by intervening vegetation or topography (**Cultural Resources Appendix CR-2 Figures 2 and 3**). Immediately north of the state beach is the Santa Clara River and estuary and Ventura Harbor. To the east, across Harbor Boulevard, are agricultural fields producing strawberries and other crops.

2.0 HISTORIC CONTEXT

2.1 California Coastal State Beaches and the Design Team

Beginning in the 1930's, the state embarked on a concerted effort to acquire land holdings along the southern coast of California, and coastal acquisitions were ramped up from the 1950's to 1970's. Governor Edmund 'Pat' Brown's administration (1959-1967) provided significant funding for state parks as well as recreation facilities for state water projects and reservoirs. The Goleta, California State Park design office did much of the planning and design work for coastal parks from San Luis Obispo County to San Diego County. The Goleta office coordinated acquisitions and planning with the headquarters office in Sacramento. State Park headquarters generally managed the construction and bidding (Deering 2015b; Sutliff 2015). Several notable landscape architects were involved with the design of the state beaches, including Robert Deering and Dale Sutliff.

According to Dale Sutliff's recollections, California Department of Parks and Recreation had four design and planning satellite offices in the 1960's, located in Carmichael (Central Valley and Sierra Region projects); Sacramento (construction documents and special projects); Monterey (Northern California; Monterey County and north); and Goleta (Southern California, San Luis Obispo to Mexico, including the desert region). The satellite design offices were closed and consolidated to Sacramento in 1968 to 1969 (Sutliff 2015).

Robert Deering
Robert Deering, FASLA, was known early in his career for being the inaugural chair of the landscape architecture program at University of California at Davis, beginning in 1950, and later as a pioneer in site cooling and heating through design. Robert Deering, CA LA #49, earned a Masters in Landscape Architecture (MLA) and a Ph.D. from Cornell University in 1949. In 1950, he was hired as the inaugural chair of the nascent Landscape Architecture program (Bachelor of Science in Agriculture) at University of

California, Davis. Robert Deering was known for studying the relationships of plant and site design for achieving shading and passive solar gain. In 1954, he travelled to the Netherlands on a Fulbright scholarship. Dr. Deering returned to Davis, California, and began a private landscape architecture practice. His practice included private residential gardens, parks and commercial sites. In partnership with architects Dreyfuss & Blackford, Robert Deering was the original landscape architect for the award-winning Mansion Inn in Sacramento, California and the Nut Tree complex in Vacaville, California. Robert Deering also collaborated with Ken Anderson of Roseville, California, on various projects, including a master plan for Sierra College in Rocklin, California.

Robert Deering then went on to a 17-year career as landscape architect with the California Department of Parks and Recreation (Parks). Robert Deering joined the Southern California Regional Office of Planning and Development in Goleta as Regional Supervisor and Senior Landscape Architect in 1963. The office was responsible for preparation of feasibility studies for the acquisition and development of parks, beaches, trail systems and historical sites. He supervised the design and development of park units (Deering 2015b). This required coordination and cooperation with other local, state, and federal agencies in the design and development process. In 1966, the Goleta Office received a State of California Governor's Good Design Award for the South Carlsbad Beach Development. Dr. Deering was active in this supervisory capacity from 1963 through September, 1971 (Deering 2015b). From 1971 to 1979, Dr. Deering was Senior Landscape Architect and Project Manager, in charge of resource analysis studies, environmental impact studies, park acquisition projects for bond financing and development of individual park units. He was involved in park design as well as real estate acquisitions for the Parks system. Upon his retirement from California State Parks in 1979, he went on to teach at King Faisal University in Saudi Arabia. He continued his work in passive solar cooling at the University. Later, Robert Deering designed private gardens in the greater Sacramento and Davis, California region. Robert Deering died at his home in Davis, California, on December 1, 2010.

Dale Sutliff

Dale Sutliff, ASLA, earned a Bachelor of Science in Landscape Architecture (BSLA) from California Polytechnic State University (Cal Poly), Pomona, California and a Master of Regional Planning (MRP) from the University of Pennsylvania. He was a member of the state parks team at the Goleta office. During his tenure with Parks, Sutliff worked on many coastal parks, the first draft of the California Coastal Plan, and a Plan for the Redwood Region. Sutliff subsequently joined the faculty at California Polytechnic University (Cal Poly), San Luis Obispo, California, in 1973. Concurrently, he established the first private landscape architecture firm in San Luis Obispo in 1975 with Jerry Emery. Their work included both private clients (Emery) and public projects (Sutliff). He was department head of the Landscape Architecture department at Cal Poly from 2001-2004 and retired from the university in 2008 (O'Hara 2012:21). As of September 30, 2015, Dale Sutliff maintains his California landscape architecture license, CA LA # 1205, issued June 29, 1968.

Other State Parks Personnel

Other members of the Goleta office included Robert Rothhaupt, Bob Kline, Ken Kolsbun, Ed Comport and Bob Baker. Little information about these landscape architects or their careers beyond state parks has been found. Robert Rothhaupt

graduated in 1957 from Michigan State University with a degree in Landscape Architecture and Urban Planning. Mr. Rauthhaupt signed the 1962 plan for McGrath State Beach as the designer (**Cultural Resources Appendix CR-2 Figure 5**). Richard Paine, who worked on a preliminary design for San Buenaventura State Beach, was located in the Sacramento office and retired from Caltrans as a Senior Landscape Architect in 1994. Investigations to date have not been able to find additional definitive information about the careers of the others involved with park design at that time.

Other personnel who were involved with the approval of the McGrath State Beach plans in 1962 include Edward Dolder, Chief, Division of State Beaches and Parks (appointed in 1961). He was later appointed by Governor Edmund "Pat" Brown as Deputy Director of the new Department of Parks and Recreation, holding that post from 1965 to 1967. Lloyd Lively was also a signatory to the 1962 McGrath State Beach plan. His career is largely unknown but he was a Superintendent of the Parks district that included Saddleback Butte State Park at its inception in 1960 (SaveSaddleback 2015; CSPR 1991, p.6) and was Superintendent of District 5 by July, 1970. It is unknown whether these districts are one and the same: districts have since been renamed and updated and offices closed over time.

Some of the park units developed in the middle part of the 20th Century in Central and Southern California coastal areas are: Doheny State Beach (established 1935); Carpinteria State Beach (established 1941); El Capitan State Beach (1953-1967); Moonlight State Beach (1960's); McGrath State Beach (established 1962); Refugio State Beach (established 1963); Seacliff and New Brighton State Beaches (by 1969), and San Buenaventura (dates unknown).

One of the more interesting aspects of the design of the state beaches in the 1960's and 1970's is that all appear to be unique. There doesn't appear to be a pro-forma design. For instance, McGrath State Beach's campground, arranged in pinwheel-like circular units, is not repeated in any of the other park designs. Dale Sutliff indicated it was the first of its type in California (Sutliff 2015).

Records from Robert Deering's photograph collection (Deering 2015a) and staff correspondence with Dale Sutliff (Sutliff 2015) indicate the designers listed in **Cultural Resources Appendix CR-2 Table 1** below were associated with the various state beaches under development by the Goleta Regional Office. It is likely that Robert Deering was involved in many of those projects in a supervisory capacity, as his archive includes plans and photographs from many state parks under development in the 1960's and 1970's.

Cultural Resources Appendix 2 Table 1

Park Unit	Date Established	Designers	Year Built
Carpenteria State Beach	1932	Civilian Conservation Corps; Design for new entry and campground expansion Ken Kolsbun.	1941/late1960s
Doheny State Beach	1935	Bob Baker et al	Ca. 1980
Doheny State Beach Day Use Area	unknown	R. Paine/Dale Sutliff/Bob Baker	unknown
El Capitán State Beach	1953/1967/2002	unknown	unknown
McGrath State Beach	1962	Bob Rothhaupt	Ca. 1962-1964
Moonlight State Beach	1960's		Ca. 1971
Refugio State Beach	1950/1963	Design for beachfront and east campground Dale Sutliff	Expansion and entrance corresponded to highway/railroad alignment in 1970s
San Buenaventura State Beach	ca. 1960s-1970s	Dale Sutliff, Ed Comport	Early 1960s, expanded over time
Seacliff and New Brighton State Beaches	1931/1933	Campgrounds and staircases to the beach Ken Kolsbun	By 1969

2.2 McGrath Family

The McGrath family's entry into local Ventura County agriculture occurred when Dominick McGrath relocated to the area in 1874 (Bodle 1977:2). Originally from Ireland, McGrath had been raising sheep in Alameda County in the San Francisco Bay Area in the 1850's and 1860's. Prior to his relocation to the Oxnard area, he acquired the rights to purchase 1,337 acres from Thomas A. Scott. That purchase was completed in 1875. The main ranch house was completed in 1879 off of Gonzales Road in Oxnard, one mile from the ocean. The McGrath house, formerly located at 5701 Gonzales Road, was recorded by Bissell on March 2, 1991 and is recorded as Ventura County Primary Record Number 56-152738 in the state's historical resources inventory, CHRIS[8] (Bissell 1991). By the time of Dominick McGrath's death in 1908, over 5000 acres had been acquired. Prior to his death, those acres were incorporated into an estate, known as the Dominick McGrath Estate Company. The estate passed to four of Dominick's sons: Hugo, Robert, Frank and Joseph. The daughters were to receive shares of stock which could then be sold to the brothers to keep the original holdings intact (Bodle 1977:18).

[8] California Historical Resources Information System.

The extent of the estate holdings were described by Bodle as follows: “at one time, you could walk from Montalvo to Hueneme without ever leaving McGrath land” (Bodle 1977:17). The estate holdings were divided by the four sons in 1948 (McGrath 2015).

Joseph McGrath ended up with the outer ranches: Camarillo, Montalvo, and the furthest portion of the Patterson Ranch, which is now where the Channel Islands Marina is located. In 1971, Joseph and his three siblings again divided their holdings. Camarillo is where the McGrath Family Farms, to this day, own two contiguous ranches, offering organic produce since 1995. The farm operates a farm stand at 1012 West Ventura Boulevard in Camarillo, California, and also provides restaurant deliveries, Community Supported Agriculture (CSA) boxes and sells at local farmer’s markets (McGrath 2015).

The McGrath house on Gonzales Road, recorded by Bissell in 1990, is no longer extant. It appears to have been removed between July and December of 2003, according to historical imagery on Google Earth. It was described as two-story rectangular building sheathed in wide clapboard siding featuring arched windows on the second floor, and was accompanied by several outbuildings. The Bissell documentation also shows an addition of an enclosed front porch when compared with earlier photographs. The approximate date of construction was 1879 (Bodle 1977:6). At the time of Bissell’s 1991 recording, it was surrounded by agricultural land. While this building is no longer extant, Bissell wrote that another McGrath Family compound was located about ¼ mile east of 5701 Gonzales and was occupied and in good condition in 1991. This appears to be extant from reviewing historic and current imagery and maps. Accounts vary between Bissell and Bodle in their locational descriptions, as to which was the original ranch house.

A 2011 mailing list for a water rights resolution listed the property owner of 5701 Gonzales Road as C B South (Coastal Berry Co., L.L.C, former Hugo McGrath Assoc.)[9]. Therefore it appears that Coastal Berry Company was still in possession of the property as of 2011.

South of the Mandalay Generating Station, and located adjacent to or within the Mandalay State Park are several small parcels owned by R H McGrath Farms. These parcels (APNs 1830010505, 1830010365, and 1830010515) are classified by the Ventura County Assessor as “Producing Oil Wells” on privately-owned land. Staff observed two of these wells on a site visit in June, 2015. They are also easily viewed in Google Earth. It is unconfirmed, but these two wells may be the wells referred to in Bodle’s article, where she writes: “The Home Ranch is the one on which two oil producing wells were brought in by the Standard Oil Company” (Bodle 1977:20). Further validating this historical account, San Buenaventura Research Associates writes that, “In 1947, Standard Oil made a major oil find on the western end of the Oxnard Plain on property owned by the McGrath Family. It is described as the West Montalvo Field and is located immediately south of the Santa Clara River and extends into the state tidelands…Four leases are located within the onshore portion of the oil field: the

[9] PROPOSED RESOLUTION NO. 2011·XX REPEALING AND REPLACING GRANDFATHERING RESOLUTION NO. 97·02, Fox Canyon Groundwater Management Agency, January 26, 2011.

McGrath #4 lease, the McGrath #5 lease, Patterson Ranch lease, Parcel 1 and Parcel 2" (SBRA 2014:71, 73). This locational description places it in the vicinity of the existing oil producing wells north and south of Mandalay Generating Station.

Detailed property record searches would be required to establish the boundaries of the McGrath holdings over time. Several sources (Bodle 1977, McGrath 2015) show a historical plot map of the holdings but the image quality of the reproduction is so poor that it is difficult make out the landmarks and text. What is known is that the holdings were quite extensive, maxing out at 5,020 acres, and that the family farm continues to this day, albeit at a much reduced size. Therefore, the McGrath Family's contributions to the development of Oxnard in terms of agriculture and, to a lesser degree, oil production, should be considered somewhat important. That Rita McGrath entered into a land sale to the State of California in 1961 is also a notable contribution of the McGrath family to Oxnard's development.

3.0 SIGNIFICANCE EVALUATION OF MCGRATH STATE BEACH

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 National Register of Historic Places (NRHP). In addition to being at least 45 years old, a resource must meet at least one (and may meet more than one) of the following four criteria (Pub. Resources Code, §5024.1):

- 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 an important creative individual, or possesses high artistic values;
- Criterion 4: has yielded, or may be likely to yield, information important to history or prehistory.

In addition, historical resources must also possess enough integrity of location, design, setting, materials, workmanship, feeling, and association to express its original historical intent (Cal. Code Regs., tit. 14, §4852[c]). Generally, evaluations are made of historical resources that are 45 years or older in accordance with Energy Commission siting regulations requiring recording of potential historic resources [(Cal. Code. Regs. ,tit. 20, § 1704 (b)(2), Appendix B(g)(2) (B) and (C)]. The State Office of Historic Preservation (OHP) also uses the 45 year threshold for evaluating historical resources (OHP 1995; p.2). These thresholds take into account the potential lag time between evaluation of a resource and the timeframe in which planning decisions are made.

CRHR Criterion 1:
While McGrath State Beach is a component of the pattern of developing California's State Beaches and Parks, it is not in itself of historic significance in that pattern of development. While McGrath State Beach has a high degree of integrity to the period of significance, 1962-1964, McGrath State Beach was neither a vanguard nor a key

element of the ongoing acquisition and development of the state beaches in the middle of the 20th Century and does not appear to be eligible for listing on the CRHR under Criterion 1.

CRHR Criterion 2:
McGrath State Beach is related contextually to the McGrath family, which had significant agricultural holdings in the Oxnard area, but only in the sense that Rita McGrath, one of the heirs of the McGrath estate, sold the land to State Parks and the park was consequently named for the McGrath family. Therefore, McGrath State Beach does not appear to be associated with the lives of persons significant in our past and does not appear to be eligible for listing on the CRHR under Criterion 2.

CRHR Criterion 3:
McGrath State Beach is associated with a group of designers and landscape architects in the former Goleta office of California Department of Parks and Recreation, two of whom, Robert Deering and Dale Sutliff, had notable careers. The association of landscape architect Robert Deering with McGrath State Beach is not clear. The park design in 1962 appears to pre-date Dr. Deering's involvement with the development of the state beaches that occurred from 1963 to 1979. The design also doesn't appear to involve the work of landscape architect Dale Sutliff. Therefore, it does not appear to represent the work of an important creative individual or individuals. While the campground's pinwheel design appears unique among the central and south state beaches developed contemporarily, it does not seem to embody the distinctive characteristics of a type, period, or method of construction, or possess high artistic values articulated in material or design choices. Therefore, McGrath State Beach does not appear to be eligible for listing on the CRHR under Criterion 3.

CRHR Criterion 4:
The developed grounds and structures at McGrath State Beach would not be likely to yield important information that is not already known through this investigation, which includes traditional avenues of research, such as reviewing plans and published literature. None of the developed grounds or structures is the principle source of information for study of mid-century park acquisition and development in California, the impact of the McGrath family on the development of the Oxnard region or the body of work of the designers involved. For these reasons, McGrath State Beach appears to be ineligible for the CRHR under Criterion 4.

4.0 CONCLUSION

The results of this investigation conclude that, as evaluated for significance under Criteria 1-4 of the CRHR, McGrath State Beach is not recommended eligible for listing on the CRHR as an historical resource. Investigation of the relevant themes of trends in California's development, persons important to that development, and creative individuals and design styles have not found the resource to be significant in those thematic areas. While McGrath State Beach has a high degree of integrity to the period of significance, 1962-1964, it does not individually attain the historic significance to make it eligible for listing on the CRHR.

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Restroom facilities at McGrath State Beach.



View of Amphitheater at McGrath State Beach.



CULTURAL RESOURCES APPENDIX 2 - FIGURE 2
Puente Power Project (P3) - Staff Photos

View of typical campsite arrangement at McGrath State Beach.



View south from McGrath State Beach Group 1, Campsites 45-48, toward oil field and Mandalay Generating Station.



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: Staff Photo June 26, 2015

CULTURAL RESOURCES APPENDIX 2 - FIGURE 3
Puente Power Project (P3) - Staff Photos

Oil field adjacent to McGrath State Beach with MGS in the background and sand dunes to the right.



Red sand verbena growing on top of dead ice plant on sand dunes at McGrath State Beach.



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: Staff Photo June 26, 2015

CULTURAL RESOURCES APPENDIX 2 - FIGURE 4

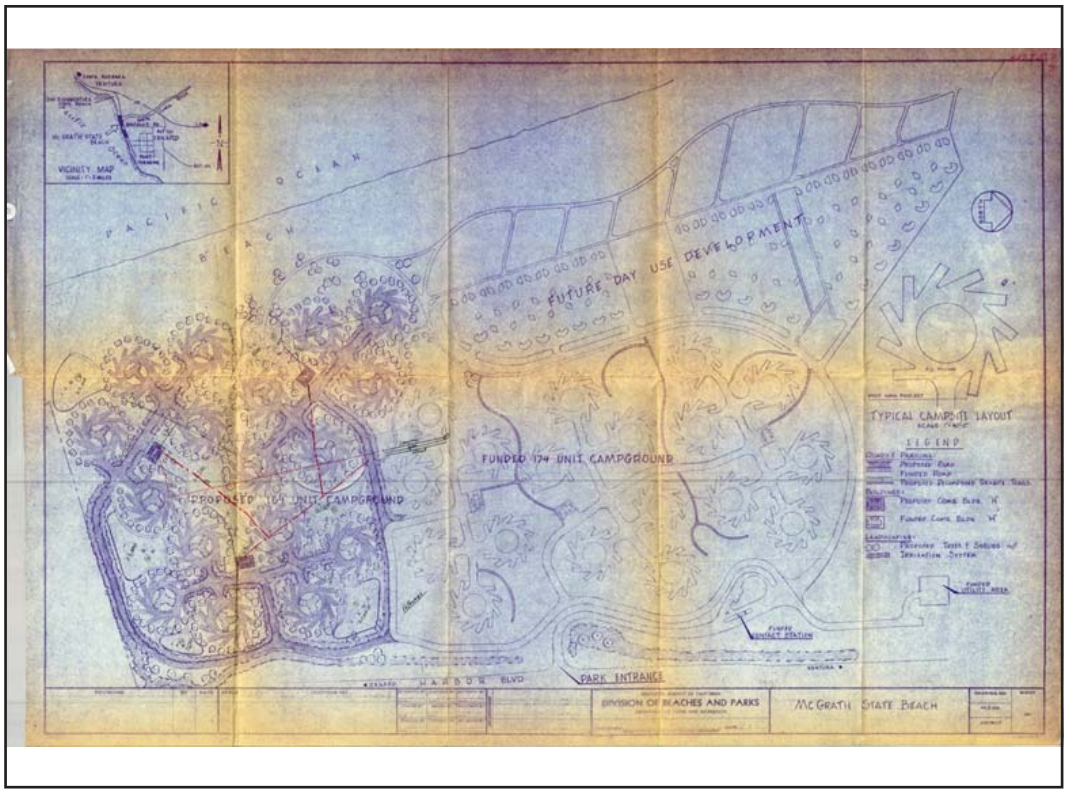
Puente Power Project (P3) - View of McGrath Lake, looking north. Transmission lines in background are running parallel to Harbor Boulevard.

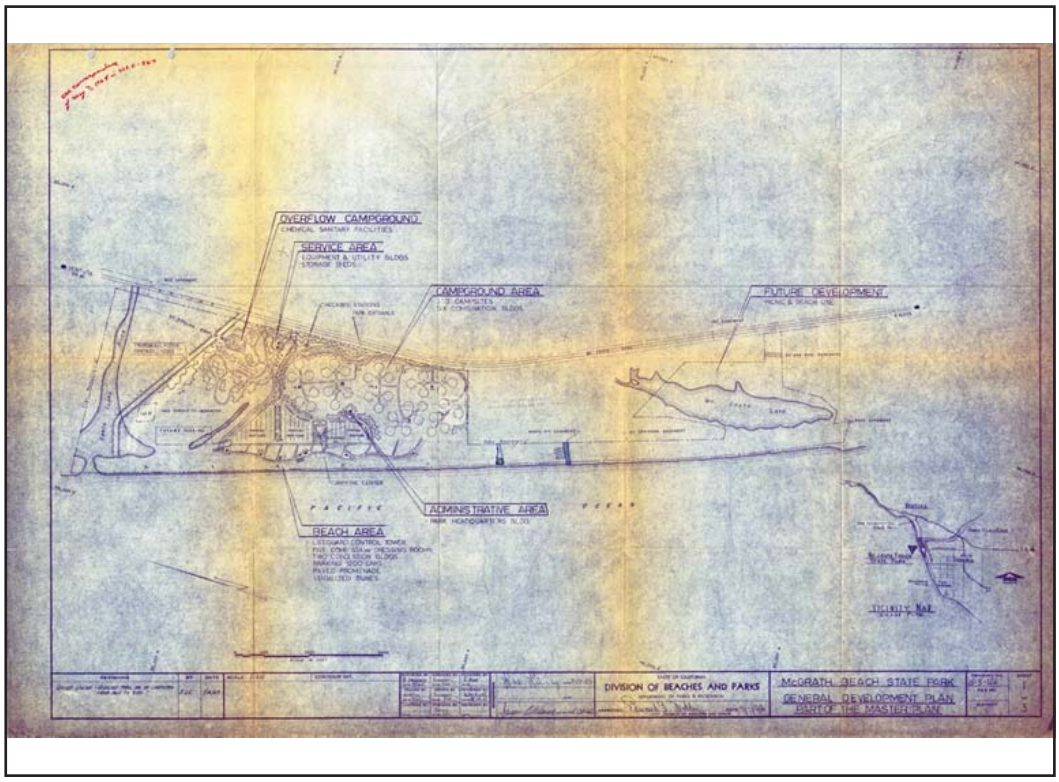


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Staff Photo June 26, 2015

CULTURAL RESOURCES APPENDIX 2 - FIGURE 5
Puente Power Project (P3) - 1962 Plan for McGrath State Beach.





CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: California State Parks.

CULTURAL RESOURCES APPENDIX 2 - FIGURE 6

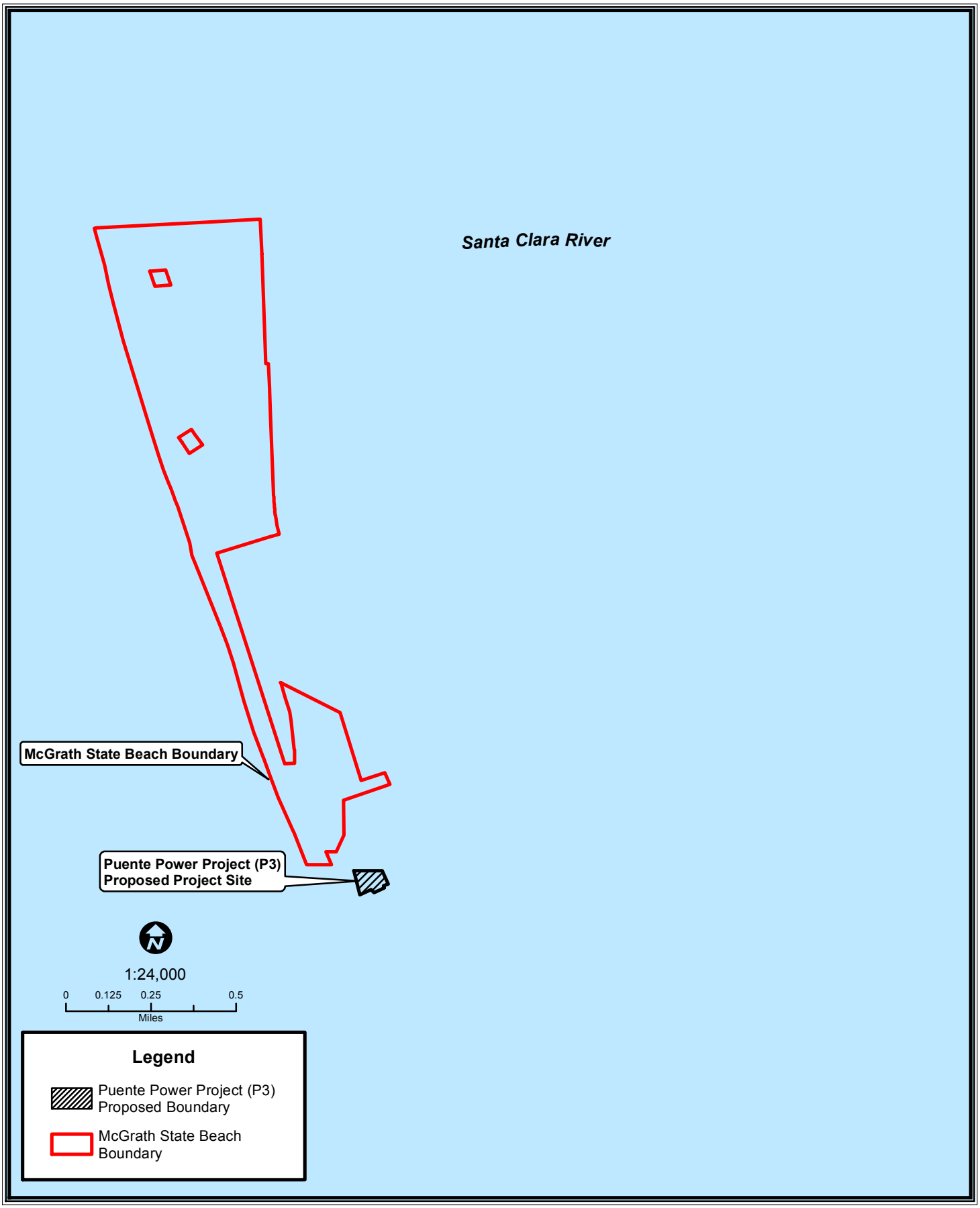
Puente Power Project (P3) - 1962 Plan for McGrath State Beach with Signatures. California State Parks



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: McGrath S.B.CA '71, Goleta Regional Office-design by Bob Rothhaupt, Photo by R. (Robert) Deering. Courtesy of Alice Deering.

CULTURAL RESOURCES - APPENDIX 2 - FIGURE 7
Puente Power Project (P3) - McGrath State Beach



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: USGS and NRG

CULTURAL RESOURCES APPENDIX 2 - FIGURE 8

Puente Power Project (P3) - McGrath State Beach Aerial View 2015



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Google Earth

CULTURAL RESOURCES APPENDIX 2 - FIGURE 9
Puente Power Project (P3) - Current McGrath State Beach



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: California State Park Brochure

HAZARDOUS MATERIALS MANAGEMENT

Brett Fooks, PE and Geoff Lesh, PE

SUMMARY OF CONCLUSIONS

Staff concludes, based on its evaluation of the proposed Puente Power Project (P3), along with staff's proposed mitigation measures, that hazardous materials use at the site would not present a significant risk of impact to the public. With adoption of the proposed conditions of certification, the proposed project would comply with all applicable laws, ordinances, regulations, and standards. In response to California Health and Safety Code, section 25531 et seq., NRG Energy Center Oxnard, LLC (NRG or 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 city of Oxnard Fire Department (COFD) and Energy Commission staff. In addition, staff's proposed conditions of certification require staff review and approval of the risk management plan prior to delivery of any bulk hazardous materials to the P3 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 P3 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 a significant risk of impact on the public is 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 personal 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) would be used to control oxides of nitrogen (NOx) emissions from the combustion turbine by means of a process called 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 the slow mass transfer from the surface of the spilled material limits emissions from such spills.

Other hazardous materials, such as mineral and lubricating oils, cleaning detergents, and welding gasses would be present at the proposed P3 project. No acutely toxic hazardous materials would be used on site during construction, and none of these materials pose significant risk of 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 (PPP 2015a, Section 4.5.2).

Although no natural gas is stored, the project would involve the handling of large amounts of natural gas. Natural gas poses some risk of both fire and explosion. The proposed P3 would connect to a new Southern California Gas Company (SoCalGas) gas metering station on the site. Approximately 500 feet of new natural gas pipeline would be installed on site from the new metering station to the new gas compressor enclosure. The compressor would boost the natural gas to 500 pounds per square inch for the combustion turbine (PPP 2015a, Section 2.7.4). The P3 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 LORS	Description
Federal	
The Superfund Amendments and Reauthorization Act of 1986 (42 USC §9601 et seq.)	Contains the Emergency Planning and Community Right To Know Act (also known as SARA Title III).
The Clean Air Act (CAA) of 1990 (42 USC 7401 et seq. as amended)	Established a nationwide emergency planning and response program and imposed reporting requirements for businesses that store, handle, or produce significant quantities of extremely hazardous materials.
The CAA section on risk management plans (42 USC §112(r))	Requires states to implement a comprehensive system informing local agencies and the public when a significant quantity of such materials is stored or handled at a facility. The requirements of both SARA Title III and the CAA are reflected in the California Health and Safety Code, section 25531, et seq.
49 CFR 172.800	The U.S. Department of Transportation (DOT) requirement that suppliers of hazardous materials prepare and implement security plans.
49 CFR Part 1572, Subparts A and B	Requires suppliers of hazardous materials to ensure that all their hazardous materials drivers are in compliance with personnel background security checks.
The Clean Water Act (CWA) (40 CFR 112)	Aims to prevent the discharge or threat of discharge of oil into navigable waters or adjoining shorelines. Requires a written spill prevention, control, and countermeasures (SPCC) plan to be prepared for facilities that store oil that could leak into navigable waters.

Applicable LORS	Description
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.
California Health and Safety Code, section 25531 to 25543.4	The California Accidental Release Program (CalARP) requires the preparation of a Risk Management Plan (RMP) and off-site consequence analysis (OCA) and submittal to the local Certified Unified Program Agency for approval.
California Health and Safety Code, section 41700	Requires that “No person shall discharge from any source whatsoever such quantities of air contaminants or other material which causes injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property.”
Title 19, California Code of Regulations, Division 2, Chapter 4.5, Articles 1-11	Sets forth the list of regulated substances and thresholds, the requirements for owners and operators of stationary sources concerning the prevention of accidental releases, the accidental release prevention programs approved under Section 112 of the federal Clean Air Act (CAA) Amendments of 1990 and mandated under the CalARP Program, and how the CalARP Program relates to the state’s Unified Program.
Title 22, California Code of Regulations, Chapter 14, Article 10	The design requirements set forth for new tank construction and secondary containment requirements for hazardous chemicals and waste.
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.

Applicable LORS	Description
Local (or locally enforced)	
City of Oxnard Municipal Code Chapter 14: Building Regulations, Article XV: Fire Codes, Section 14-24	The city has adopted the 2013 California Fire Code.
City of Oxnard Municipal Code Chapter 14: Building Regulations, Article XV: Fire Codes, Section 14-25	The city has adopted amendments to the 2013 California Fire Code.
City of Oxnard Municipal Code Chapter 14: Building Regulations, Article XVI: Fire Sprinklers, Section 14-26	The city has adopted amendments to the 2013 California Fire Code, Section 903, Automatic Sprinkler Systems.

The Certified Unified Program Authority (CUPA) with the responsibility to review the Hazardous Materials Business Plan (HMBP), Risk Management Plan (RMP), and Spill Prevention Control and Countermeasure (SPCC) filed by businesses located within the city is the city of Oxnard Fire Department (OFD). The OFD is responsible for all other CUPA programs including underground storage compliance. Construction and design of the buildings and vessels storing hazardous materials would meet the appropriate seismic requirements of the latest adopted (2013 or later) California Building Code and the latest adopted (2013 or later) California Fire Code.

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 4.1 of the Application for Certification (AFC) (PPP 2015a). 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 three years is appropriate for conducting the worst-case off-site consequence analysis (PPP 2015a, Section 4.5.2.3.2).

TERRAIN CHARACTERISTICS

The location of elevated terrain is often an important factor in assessing potential exposure. An emission plume resulting from an accidental release may impact high elevations before impacting lower elevations. The existing P3 topography is virtually flat, sloping seaward and bounded on the west by sand dunes along the coastline. The existing site is on relatively level ground at an elevation of 14 feet mean lower low water (MLLW). The sand dunes and flood protection berm that border the facility range in elevation from 20 to 30 feet MLLW (PPP 2015a).

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. The nearest sensitive receptor would be a family childcare on Reef Way, approximately one mile to the southeast (PPP 2015a, Section 4.9.1). The nearest residents would be approximately 0.74 miles to the south. There is also a scheduled residential development to start construction at the end of 2016, which would be approximately 0.47 miles to the southeast of the site (PPP 2015a, Section 4.9.1).

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. The chemicals listed in the AFC (PPP 2015a , Table 4.5-1 & Table 4.5-2) 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. To accomplish this goal, staff utilized the 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 would use the chemicals, the

manner by which they would 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 would 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 goals are to prevent spills, and prevent the spills 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 which are shown in Appendix B of this PSA.. 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 Appendix B of this PSA 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 would 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 would 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 paints, paint thinners, cleaners, solvents, sealants, gasoline, diesel fuel, motor oil, hydraulic fluid, lubricants, and welding gases. Any impact of spills or other releases of these materials would 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 **Appendix B** of this PSA for a list of all chemicals proposed to be used and stored at P3) 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 would 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. Although methane is colorless, odorless, tasteless, and lighter than air, odorant is added to natural gas to make even small quantities easily noticed. Methane can cause asphyxiation above 90 percent in concentration. Methane is flammable when mixed in air at concentrations of 5-14 percent, which is also the detonation range. Natural gas, therefore, poses a risk of fire and/or possible explosion if a release occurs under certain specific conditions. However, it should be noted that, due to its tendency to disperse rapidly (Lees 2012), natural gas is less likely to cause explosions than many other fuel gases such as propane or liquefied petroleum gas. Natural gas can explode under certain confined conditions as demonstrated by the natural gas explosion at the Kleen Energy power plant in Middletown, Connecticut in February 2010 (Chemical Safety Board (US CSB 2010).

While natural gas would be used in significant quantities, it would not be stored on site. It would be delivered by SoCalGas via a new gas metering station (PPP 2015a, Section 2.7.4). The pipeline and new onsite metering station are, and would continue to be, owned and operated by SoCalGas.

The existing SoCalGas metering station, located on-site near the northern end of the existing site, would remain in service during P3 construction for continued operation of the existing Mandalay Generating Station (MGS) Units 1 & 2 until they are

decommissioned. The existing metering station would continue to serve MGS Unit 3 on the site.

The risk of a fire and/or explosion on site can be reduced to insignificant levels through adherence to applicable codes and the development and implementation of effective safety management practices. The National Fire Protection Association (NFPA) code 85 requires both the use of double-block and bleed valves for gas shut off and automated combustion controls. These measures would 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 due to either improper maintenance or human error.

Staff concludes that existing LORS are sufficient to ensure minimal risks of failure of a new interconnection pipeline. Additionally, the new and existing gas metering stations are 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 (US 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 (US Chemical Safety Board 2010). Recommendations were also made to the 50 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 gases for pipe cleaning (gas blows) at the facility, including during construction and after the start of operations. Fuel gas pipe cleaning and purging shall adhere to the provisions of the latest edition of NFPA 56, the Standard for Fire and Explosion Prevention during Cleaning and Purging of Flammable Gas Piping Systems, with special emphasis on sections 4.4.1 (written procedures for pipe cleaning and purging) and 6.1.1.1 (prohibition on the use of flammable gas for cleaning or purging at any time).

Aqueous Ammonia

Aqueous ammonia would be used to control the emission of oxides of nitrogen (NO_x) from the combustion of natural gas at the P3. The accidental release of aqueous ammonia without proper mitigation can result in significant down-wind concentrations of ammonia gas. P3 would have 19-percent aqueous ammonia solution in an existing 14,650-gallon horizontal above ground storage tank (PPP 2015a, Section 4.5.2.3.1). Actual storage contents would be limited to 12,450 gallons or 85 percent of tank capacity. Based on staff's analysis described above, aqueous ammonia is the only hazardous material that may pose a risk of off-site impact. The use of aqueous ammonia can result in the formation and release of toxic gases (Lees 2012) 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 would 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.

To assess the potential impacts associated with an accidental release of aqueous ammonia, staff uses four benchmark 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 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 assumes that the potential release poses a risk of significant impact. However, staff then also assesses 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 **Appendix A**.

Section 4.5.2.3.2 and Appendix F of the AFC (PPP 2015a) described the modeling parameters that the project proposed to use for the worst-case accidental release of aqueous ammonia in the applicant's off-site consequence analysis (OCA). A new OCA analysis (PPP 2016h) with a new secondary containment location was docketed that superseded the description contained in the original AFC. Pursuant to the California Accidental Release Program (CalARP) regulations, (federal RMP 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 reviewed the applicant's revised proposed aqueous ammonia storage facility description and updated OCA results (PPP 2016h).The applicant proposes placing a single layer of high density polyethylene (HDPE) balls inside a new secondary containment structure to limit the exposed surface area from 700 square feet to 65 square feet. The HDPE balls, which are small plastic ball that are approximately 4 inches in diameter, would reduce the effective surface area of the secondary containment by 90 percent limiting the evaporation rate of the aqueous ammonia. Staff verified the applicant's updated OCA results using the Areal Locations of Hazardous Atmopsheres (ALOHA) modeling software. Staff's modeling using ALOHA indicated that in the event of a worst-case release, there would be a very small potential that ammonia

concentrations of 75 ppm could reach just beyond the fence line of the project site, but would not extend to any off-site sensitive receptors. Staff concurs with the applicant's ALOHA modeling and determination that a potential worst-case spill of aqueous ammonia would not pose a significant risk to off-site members of the public.

Staff's proposed Condition of Certification **HAZ-4** ensures that the aqueous ammonia secondary containment structure would include essential design elements to prevent a worst-case spill from producing significant off-site impacts. **HAZ-4** would also require that the applicant adopt best management practices for the maintenance of the HDPE balls.

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 P3 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 delivery truck unloading pad that drains into the storage tank's secondary containment structure;
- process protective systems including continuous tank level monitors, automated leak detectors, temperature and pressure monitors, alarms, and emergency block valves; and
- a single layer of HDPE balls to reduce the effective surface area and evaporation rate of any aqueous ammonia in the secondary containment.

Administrative Controls

Administrative controls also help prevent accidents and releases (spills) from occurring and 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 would be prepared by the applicant and would 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 would 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 would be required to develop a safety management plan for the delivery of all liquid hazardous materials, including aqueous ammonia. Staff considers that an accidental release of aqueous ammonia during transfer from the delivery truck to the storage tank, although likely much smaller in spilled volume than a worst-case spill, would be the most probable accident scenario and therefore proposes Condition of Certification **HAZ-3** requiring the development of a safety management plan. A safety management plan addressing the delivery of all liquid hazardous materials during construction, commissioning and operations would 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.

The applicant would 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 would also be prepared by the applicant and would incorporate California requirements for the handling of hazardous materials. 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 condition of Certification **HAZ-4** would require that the final design drawings for the aqueous ammonia storage (and secondary containment) facility be submitted to the compliance project manager (CPM) for review and approval.

On-Site Spill Response

In order to address the issue of spill response, the facility would prepare and implement an emergency response plan that would include 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 would be established which include evacuation, spill cleanup, hazard prevention, and emergency response.

The emergency first responders to a hazardous materials incident at P3 would be from Station No. 6 of the OFD. If needed, a full hazardous materials response team would be provided from OFD Station No. 7. Staff finds that the OFD response team would be capable of responding to a hazardous materials emergency call from P3.

Transportation of Hazardous Materials

Hazardous materials, including aqueous ammonia, would be transported to the facility by tanker truck. While many types of hazardous materials would 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 US Highway 101, exiting on Victoria Avenue and traveling south to Gonzales Road, then west on Gonzales Road to Harbor Boulevard, then south on Harbor Boulevard to the P3 entrance (PPP 2015a, Section 4.5.2.3.1).

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 freeway US Highway 101. 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.

To address the issue of tanker truck safety, aqueous ammonia would be delivered to the proposed facility in DOT-certified vehicles with design capacities of less than 7,000 gallons. These vehicles would be designed to meet or exceed the specifications of MC307/DOT 407. 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 would 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 those specific to 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 Harwood studies (Harwood 1990 & Harwood 1993) to determine that the truck accident rate for the transportation of materials in the U.S. is between 0.64 and 13.92 per 1,000,000 miles traveled on well-designed roads and highways. The applicant estimated that routine operation of the proposed P3 would require one to two ammonia deliveries per month, each delivering about 7,000 gallons (PPP 2015a, Section 4.5.2.3.1). Each delivery would travel approximately 4.95 miles from US Highway 101 to the facility.

This would result in a maximum of 10 miles of tanker truck travel in the project area per month during peak operation (with a full load) and an average of approximately 119 miles of tanker truck travel per year (assuming two deliveries per month). Staff believes that the risk over this distance is insignificant.

In addition, staff used a transportation risk assessment model (Harwood 1993, Brown 2000 & Guidelines for Chemical Transportation Risk Analysis 1995) in order to calculate the probability of an accident resulting in a release of a hazardous material due to delivery from the highway to the facility via Victoria Avenue to North Harbor Boulevard. Results show a risk of about one in 298,000 for one trip from US Highway 101 and a total annual risk of about one in 12,000 for 24 deliveries over a year. This risk was calculated using accident rates on various types of roads (in this case, urban multilane undivided and multilane divided) with distances traveled on each type of road computed separately. Although it is an extremely conservative model in that it includes accident rates per million mile of highway trucking as a mode of 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 has determined 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 would be very unlikely. 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 and studies) demonstrates that the risk of accident and exposure is less than significant.

In order to further ensure that the risk of an accident involving the transport of aqueous ammonia to the power plant is insignificant, staff proposes Condition of Certification **HAZ-6**, which would require the use of only the specified and California Highway Patrol-approved route for delivery of hazardous materials 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 over that 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, heightened concerns about the earthquake safety of power plants.

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 has also reviewed the impacts of the recent earthquakes in Haiti (January 12, 2010; magnitude 7.0) and Chile (February 27,2010; magnitude 8.8). The building standards in Haiti are not as stringent while those in Chile are similar to California building seismic codes. Reports show a lack of impact on hazardous materials storage and pipelines infrastructure in both countries. For Haiti, this most likely reflects a lack of industrial storage tanks and gas pipelines; for Chile, this most likely reflects the use of strong safety codes. 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. Staff notes that the proposed facility would be designed and constructed to the standards (including seismic) of the most recent (2013 or later) California Building Code (PPP2015a, Section 4.4 & Appendix 2C).

Therefore, on the basis of what occurred in Northridge (with older tanks) and the lack of failures during the Nisqually earthquake (with newer tanks) and in the 2010 Chilean earthquake (with rigorous seismic building codes), and given that the construction of P3 would comply with stringent California Building Codes, staff determines 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) and the U.S. Department of Justice published a special report entitled *Chemical Facility Vulnerability Assessment Methodology* (US

DOJ 2002). The North American Electric Reliability Corporation (NERC) published an updated *Security Guideline for the Electricity Sector: Physical Security* (2011) and the U.S. Department of Energy (U.S.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 on November 2, 2007, with the publication of the list of chemicals in Appendix A to the rule. While the rule applies to aqueous ammonia solutions of 20 percent or greater, and this proposed facility plans to utilize a 19 percent aqueous ammonia solution, staff maintains 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 would be prepared for the proposed facility and would 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 (PPP 2015a, Section 4.5.4).

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 P3 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 would be used, in part, to determine the severity of consequences of a catastrophic event.

In order to determine the level of security, 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 Corporation's (NERC) 2011 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, 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 would have to maintain their transport vehicle fleet and employ only properly licensed and trained drivers. The project owner would 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 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 has determined 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 comingling to create a significant impact, are even more remote. Staff concludes that the risk to the public is insignificant.

The applicant would develop and implement a hazardous materials handling program for P3 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 P3 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.

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Staff concludes that construction and operation of the P3 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 would pose no significant impact to the public. Staff's analysis also shows that there would be no significant cumulative impact. With adoption of the proposed conditions of certification, the proposed project would comply with all applicable LORS. In response to California Health and Safety Code, section 25531 et seq., the applicant would 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 OFD and by Energy Commission staff. In addition, staff's proposed Condition of Certification **HAZ-2** requires 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 to ensure that the project would be 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 measures proposed by the applicant and staff are required and implemented, the use, storage, and transportation of hazardous materials would 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 this staff assessment, unless there is prior approval by the Energy Commission CPM. Condition of Certification **HAZ-2** requires that an RMP be submitted and approved prior to the delivery of aqueous ammonia.

Condition of Certification **HAZ-3** would require the development of a safety management plan for the delivery of all liquid hazardous materials, including aqueous ammonia. Condition of Certification **HAZ-4** requires that the aqueous ammonia storage tank be designed to appropriate standards. 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, the Hazardous Materials Business Plan's list of hazardous materials and quantities contained at the facility.

HAZ-2 The project owner shall concurrently provide a Hazardous Materials Business Plan (HMBP), a Spill Prevention Control and Countermeasure Plan (SPCC), and a Risk Management Plan (RMP) to the city of Oxnard Fire Department (OFD) and the CPM for review. After receiving comments from the OFD and the CPM, the project owner shall reflect all recommendations in the final documents. Copies of the final Hazardous Materials Business Plan and RMP shall then be provided to the OFD for information and to the CPM for approval.

Verification: At least 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 HMPB and SPCC to the CPM for approval.

At least 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 city of Oxnard 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 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 the ASME Code for Unfired Pressure Vessels, Section VIII, Division 1. The storage tank shall be protected by a secondary containment vault capable of holding precipitation from a 24-hour, 25-year storm event plus 100 percent of the capacity of the largest tank within its boundary. The containment vault shall contain one layer of high-density polyethylene (HDPE) balls that would serve as the passive mitigation. The final design drawings and specifications for the

ammonia storage tank and secondary containment basin shall be submitted to the CPM. A Best Management Practices (BMPs) plan for the maintenance of the HDPE balls shall also be submitted to the CPM.

Verification: At least 30 days prior to start of construction of the aqueous ammonia storage and transfer facility, the project owner shall submit final design drawings and specifications for the ammonia storage tank, ammonia pumps, ammonia detectors, and secondary containment basin along with the BMP plan to the CPM for review and approval. In the Annual Compliance Report, the project owner shall include a report on the annual HDPE ball inspection and how many damaged balls were replaced.

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 MC-307/DOT-407.

Verification: At least 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 Prior to initial delivery, the project owner shall direct vendors delivering bulk quantities (>800 gallons per delivery) of hazardous material (e.g., aqueous ammonia, lubricating and insulating oils) to the site to use only the route approved by the CPM (from US Highway 101 along Victoria Avenue to Gonzales Road via North Harbor Boulevard to the facility). The project owner shall obtain approval of the CPM if an alternate route is desired.

Verification: At least 60 days prior to initial receipt of bulk quantities (>800 gallons per delivery) of hazardous materials (e.g., aqueous ammonia, lubricating or insulating oils) and at least 10 days prior to a new vendor delivery of bulk quantities (>800 gallons per delivery), the project owner shall submit a copy of the letter containing the route restriction directions that were provided to the hazardous materials vendor 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, incident or emergency; and,

6. evacuation procedures.

Verification: At least 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 would 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 Security Guideline for the Electricity Sector: Physical Security v1.9).

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 percent 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, seven days per week; **or**

   B. power plant personnel on site 24 hours per day, seven days per week, and perimeter breach detectors **or** on-site motion detectors.

The project owner shall fully implement the security plans and obtain CPM approval of any substantive modifications to those security plans. The CPM may authorize modifications to these measures, or may require additional measures such as protective barriers for critical power plant components—transformers, gas lines, and compressors—depending upon circumstances unique to the facility or in response to industry-related standards, security concerns, or additional guidance provided by the U.S. Department of Homeland Security, the U.S. Department of Energy, or the North American Electrical Reliability Corporation, after consultation with both appropriate law enforcement agencies and the project owner.

Verification: At least 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 signed statements similar to Attachments A and B 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 signed statement similar to Attachment C 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 the latest edition of NFPA 56, Standard for Fire and Explosion Prevention during Cleaning and

Purging of Flammable Gas Piping Systems. A written procedure shall be developed and implemented as per NFPA 56, section 4.4.1.

Verification: 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 the 2014 NFPA 56, section 4.4.1) 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

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. The California Environmental Quality Act requires permitting agencies making discretionary decisions to identify and mitigate potentially significant impacts through feasible changes or alternatives to the proposed project.

Staff has chosen to use the National Research Council's 30-minute Short Term Public Emergency Limit (STPEL) for ammonia to determine the potential for significant impact. This limit is designed to apply to accidental unanticipated releases and subsequent public exposure. Exposure at this level should not result in serious effects but would result in "strong odor, lacrimation, and irritation of the upper respiratory tract (nose and throat), but no incapacitation or prevention of self-rescue." It is staff's opinion that exposures to concentrations above these levels pose significant risk of adverse health impacts on sensitive members of the general public. It is also staff's position that these exposure limits are the best available criteria to use in gauging the significance of public exposures associated with potential accidental releases. It is, further, staff's opinion that these limits constitute an appropriate balance between public protection and mitigation of unlikely events and are useful in focusing mitigation efforts on those release scenarios that pose real potential for serious impacts on the public. Table 1 provides a comparison of the intended use and limitations associated with each of the various criteria that staff considered in arriving at the decision to use the 75-ppm STPEL.

Hazardous Materials Appendix A Table-1
Acute Ammonia Exposure Guidelines

Guideline	Responsible Authority	Applicable Exposed Group	Allowable Exposure Level	Allowable* Duration of Exposures	Potential Toxicity at Guideline Level/Intended Purpose of Guideline
IDLH[2]	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 ten 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 eight-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)	150 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

AIHA. 1989. American Industrial Hygienists Association, Emergency Response Planning Guideline, Ammonia, (and Preface) AIHA, Akron, OH.

EPA. 1987. U.S. Environmental Protection Agency, Technical Guidance for Hazards Analysis, EPA, Washington, D.C.

NRC. 1985. National Research Council, Criteria and Methods for Preparing Emergency Exposure Guidance Levels (EEGL), Short-Term Public Emergency Guidance Level (SPEGL), and Continuous Exposure Guidance Level (CEGL) documents, NRC, Washington, D.C.

NRC. 1972. Guideline for Short-Term Exposure of the Public to Air Pollutants. IV. Guide for Ammonia, NRC, Washington, D.C.

NIOSH. 1994. National Institute of Occupational Safety and Health, Pocket Guide to Chemical Hazards, U.S. Department of Health and Human Services, Washington D.C., Publication numbers 94-116.

WHO. 1986. World Health Organization, Environmental Health Criteria 54, Ammonia, WHO, Geneva, Switzerland.

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

HAZARDOUS MATERIALS
APPENDIX B

Hazardous Materials Proposed for Use at the P3
Hazardous Materials Appendix B

Table 4.5-3 (From AFC) Hazardous Materials Use and Storage during Operations				
Hazardous Material	**Purpose**	**Maximum Stored**	**Storage Type**	**Storage Location**
Acetylene	Welding	540 cubic feet	Cylinder	Maintenance/warehouse building
Amine	Steam-cycle corrosion inhibitor	400 gallons	Aboveground tote	Boiler-chemical feed area
Antiscalant	RO system	400 gallons	Aboveground tote	Water treatment building
Aqueous ammonia (19 percent)	NO_X reduction in SCR	20,000 gallons	Aboveground tank	Ammonia storage area
Aqueous ammonia (19 percent)	Steam-cycle condensate corrosion inhibitor	400 gallons	Aboveground tank	Boiler-chemical feed area
Carbon dioxide	Fire suppression for CTG	500 gallons	Aboveground tank	Fire-suppression systems near CTG
Citric acid	Cleaning of HRSG interior piping	5,000 gallons	Chemical storage bags	TBD
Cleaners/Detergents	Combustion turbine cleaning	1,000 gallons	Manufacturer containers	Water treatment building
Cleaning chemicals	Reverse osmosis cleaning	150 gallons	Manufacturer containers	Water treatment building
Cleaning chemicals	Cleaning	<25 gallons or 100 pounds	Manufacturer containers	Admin/Control building, maintenance/ warehouse building
Diesel No. 2 or Ultra-low Sulfur Diesel	Black-start generator/fire pump	500 gallons	Tanks	Fire-pump area
USEPA Protocol gases	Calibration gases	1,000 cubic feet	Cylinder	TBD
Hydraulic oil	High-pressure combustion turbine starting system	700 gallons	Equipment/Steel drum	Equipment/maintenance/warehouse building
Hydrogen	Cooling for generator	100 gallons	Aboveground tank	TBD
Laboratory reagents	Water/wastewater laboratory analysis	10 gallons	Manufacturer container	Laboratory chemical storage cabinet
Lubrication oil	Lubrication for rotating equipment	1,500 gallons	Lubricating oil reservoirs/ steel drums	Rotating equipment
Mineral-insulating oil	Insulating	3,500 gallons	Transformers	Transformers

Table 4.5-3 (From AFC)
Hazardous Materials Use and Storage during Operations (Continued)

Hazardous Material	Purpose	Maximum Stored	Storage Type	Storage Location
Natural gas	Fuel for power plant	Not stored on site	Pipeline	Continuous by pipeline
Nitrogen	Nitrogen blanketing of HRSG layup	Truck load	N/A	Near HRSG
Oxygen	Welding	540 cubic feet	Cylinder	Maintenance/warehouse building
Paint	Painting	25 gallons	Can/bucket	Maintenance/warehouse building
Phosphoric acid (70 percent)	Ultrafilter membrane cleaner	400 gallons	Aboveground tote	Water treatment building
Propane	Torch gas	200 cubic feet	Cylinder	Maintenance/warehouse building
Sodium bisulfite	RO system	400 gallons	Aboveground tote	Water treatment building
Sodium hydroxide (<30 percent)	Circulating water	200 gallons	Aboveground tote	Water treatment building
Sodium hydroxide (<30 percent)	Boiler-water pH control	55 gallons	Drum	Boiler-chemical feed area
Sodium hypochlorite (12 to 14 percent, trade)	Membrane cleaner	500 gallons	Aboveground tote	Water treatment building
Sodium nitrite	Corrosion inhibitor	55 gallons	Drum	Water treatment building
Trisodium phosphate	Boiler-water pH control	400 gallons	Aboveground tote	Boiler-chemical feed area
Waste oil	Oil waste from various plant machinery	150 gallons	Drum	Hazardous waste storage area
Various hazardous wastes	Waste	TBD	Drum	Hazardous waste storage area

Notes: Quantities are based on presumed operation conditions. Use and storage would be optimized during final design.

CTG = combustion turbine generator
HRSG = heat recovery steam generator
N/A = not applicable
NO_X = oxides of nitrogen
RO = reverse osmosis
SCR = selective catalytic reduction
TBD = to be determined
USEPA = U.S. Environmental Protection Agency

LAND USE

Ashley Gutierrez and Eric Knight

SUMMARY OF CONCLUSIONS

With staff's proposed condition of certification, the proposed Puente Power Project (P3) would comply with applicable laws, ordinances, regulations, and standards (LORS) related to land use. The P3 would be required to provide an area for public access and use to satisfy the Warren-Alquist Act. Staff will work with the city of Oxnard, the applicant, and other agencies and individuals to designate a site and use that will satisfy this requirement. Staff will finalize Condition of Certification **LAND-1** in the Final Staff Assessment (FSA) to ensure that the P3 provides a public use area.

The proposed project is consistent with the current development patterns for the area established by the city of Oxnard General Plan Land Use Element, Local Coastal Plan (LCP) and Coastal Zoning Ordinance[1]. In addition, the project would be consistent with development standards of the Coastal Energy Facilities (EC) sub-zone.

Land Use staff has verified that the proposed project would not result in any physical land use incompatibilities with the existing surrounding land uses in the following impact areas: **Noise and Vibration, Traffic and Transportation, Public Health, Air Quality, Hazardous Materials Management, and Soil and Water**. Furthermore, with the implementation of Conditions of Certification **VIS-1** and **VIS-2** the proposed project would not significantly impact **Visual Resources**.

Staff has not identified any significant adverse direct or cumulative land use impacts resulting from the construction or operation of the proposed project, including impacts to the environmental justice population. Therefore, there are no land use environmental justice issues related to this project and no minority or low-income populations would be significantly or adversely impacted.

INTRODUCTION

This land use analysis addresses project compatibility with existing land uses; consistency with applicable city of Oxnard and state LORS; and potential project related direct, indirect, and cumulative environmental effects.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

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 summarized in

[1] On June 7, 2016 the City ccouncil of Oxnard voted 5-0 to approve an amendment to the city of Oxnard General Plan to prohibit power generation facilities greater than 50 MW in areas subject to coastal hazards (which includes the Mandalay Generating Station and P3 sites). Unless rescinded or otherwise reconsidered, the general plan amendment will become effective July 7, 2016. Staff will address any inconsistencies between the P3 and local land use plans arising from approval of the general plan amendment in the Final Staff Assessment.

Land Use Table 2. The project site does not involve federally managed lands, therefore, there are no applicable federal land use-related LORS.

Land Use Table 1 Applicable Laws, Ordinances, Regulations, and Standards	
LORS	**Description**
Federal	None
State	
Warren-Alquist Act Public Resources Code, section 25529	Pursuant to Public Resources Code section 25529, the Energy Commission shall require public access to coastal resources as a condition of certification of a facility proposed in the coastal zone.
California Coastal Act of 1976, Public Resources Code, Chapter 3, section 30200 et seq.	The California Coastal Act establishes a comprehensive scheme to govern land use planning along the entire California coast. The Act requires that new development not interfere with the public's right of access to the shoreline. It also encourages the use of existing coastal-dependent industrial sites within the coastal zone instead of using undeveloped areas of the coastal zone.
Local	
City of Oxnard 2030 General Plan Land Use Element	The City of Oxnard General Plan Land Use Element, adopted October 2011, sets out a vision to guide future development in the city through 2030.
City of Oxnard Coastal Land Use Plan (OCLUP)	The OCLUP, adopted February 1982, is the supplemental development policy document to the Oxnard General Plan. Together, these two documents govern future development and character of the city of Oxnard's Coastal Zone
City of Oxnard Zoning Ordinance Coastal Zoning, Chapter 17	The Oxnard Zoning Ordinance establishes all of the regulatory, penal and administrative laws of general application within the city. The purpose of Chapter 17 is to effectively integrate the OCLUP with the officially adopted Oxnard General Plan and Zoning Ordinance, as applied to the defined coastal zone.

SETTING

PROJECT SITE

The proposed P3 site is located in the city of Oxnard at 393 North Harbor Boulevard in Ventura County. The project would be located entirely within the parcel boundaries of the currently operating Mandalay Generating Station (MGS).

The P3 would be a natural gas-fired, simple-cycle, dry-cooled, 262-net-megawatt (MW) electrical generating facility consisting of a single independently operating, single-fuel combustion turbine generator, natural gas compressor station, new underground fire loop, and back-up generator. Water would be provided by the city of Oxnard through an existing connection on the MGS property. Wastewater would be stored in existing retention basins on the MGS property and discharged into the ocean through the existing outfall or re-used onsite for plant operations.

The P3 would be sited on approximately 3 acres of the 36-acre MGS property. The Ventura County Assessor's Parcel Number (APN) for the P3 project site is 183-0-022-025. The primary access to the P3 facility would be from the existing MGS entrance off of North Harbor Boulevard, south of the intersection of Gonzales Road and North Harbor Boulevard.

If the P3 is licensed, the applicant plans to demolish units 1 and 2 including the 200-foot tall exhaust stack. Demolition would include removing the auxiliary mechanical and electrical equipment associated with the MGS units up to the switchyard, but not the removal of the electric switchyards, which are owned and operated by Southern California Edison (SCE) (PPP 2015e). Refer to the **Project Description** section of this document for additional details regarding demolition activities.

Construction Laydown and Parking Areas

All construction laydown and construction parking areas would be located within the existing MGS site. According to the application for certification (AFC), approximately 5.7 acres would be used for construction laydown and parking. During P3 construction, all construction equipment and supplies would be trucked directly to the project site (PPP 2015a, Section 2.9.2.3).

Transmission Lines and Infrastructure

The P3 would utilize existing potable water, natural gas, storm-water, process wastewater, sanitary pipelines, and electrical transmission facilities. No off-site linear developments are proposed as part of the project. However, the project proposes the construction of a new onsite, 220-kilovolt (kV) transmission line that would serve as a connection to the existing SCE 220-kV switchyard.

GENERAL PLAN LAND USE AND ZONING DESIGNATIONS

Land Use Figure 1 (City of Oxnard General Plan Land Use Map) and **Land Use Figure 2** (Zoning Designations) illustrate the land use and zoning designations of the proposed power plant site and 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 city of Oxnard's existing and planned pattern of land use development in the project area.

SURROUNDING AREA

The existing land uses surrounding P3 include McGrath State Beach, McGrath Lake, oil wells and processing operations, and a habitat restoration area to the north. The SCE McGrath Peaker Plant and Mandalay Beach County Park are both south of the project site. Oil wells and processing operations in addition to agriculture are located east of the project site. Mandalay State Beach borders the project site to the west extending to the Pacific Ocean. General plan land use designations immediately adjacent to and nearby the proposed P3 site include:

- North: Recreation Area (Coastal Zone Area) & Resource Protection (Open Space)
- East: Public Utility/Energy Facility & Resource Protection (Open Space)
- South: Public Utility/Energy Facility & Resource Protection (Open Space)
- West: Recreation Area (Coastal Zone Area), Resource Protection (Open Space),
- and the Pacific Ocean.

PROJECT SITE

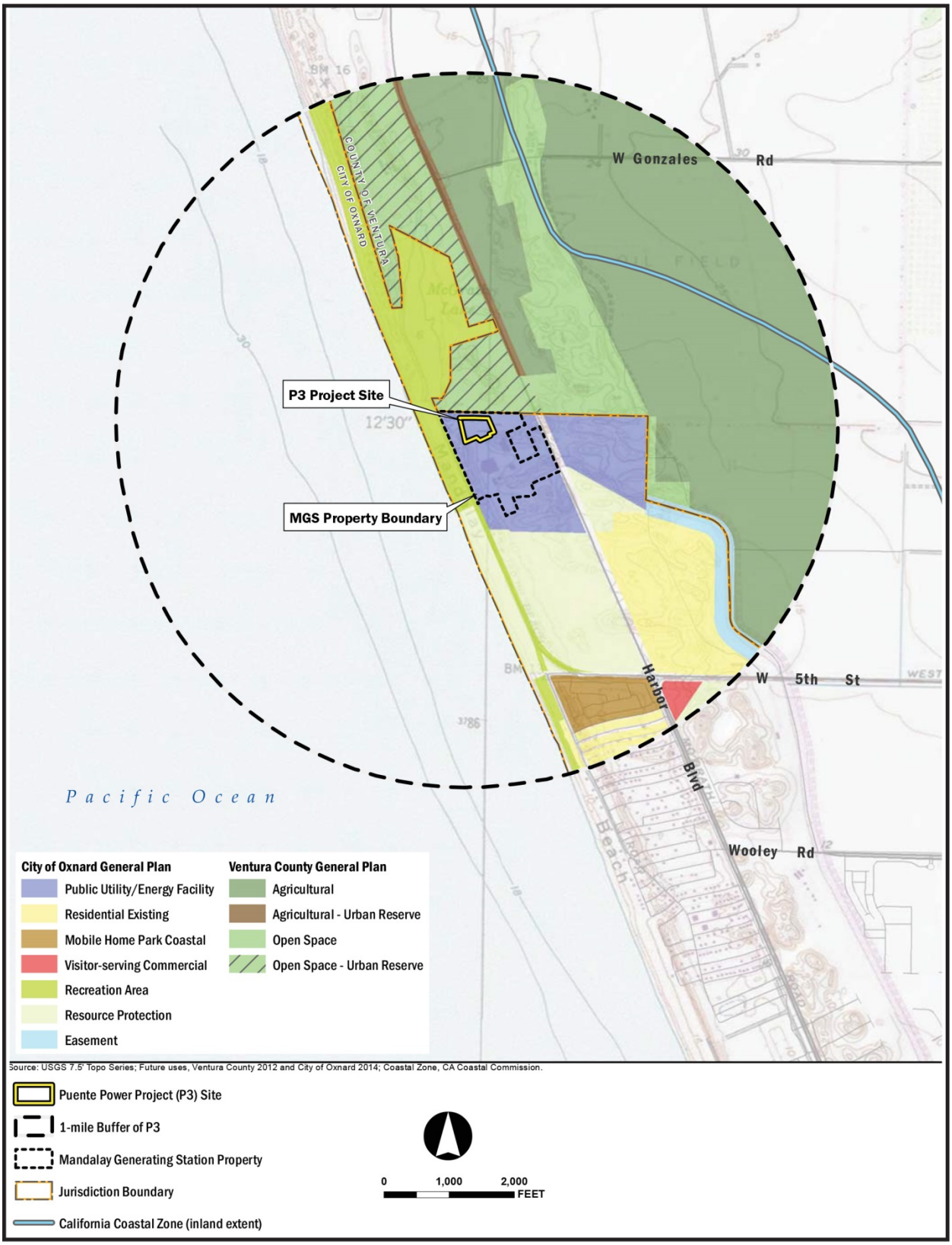
The P3 site is designated by the 2030 Oxnard General Plan as Public Utility/Energy Facility (PUE). The 2030 Oxnard General Plan states that this land use applies to large electrical generating and transmission facilities. Due to the uniqueness of these types of facilities, the development intensity is established on an individual basis (COO 2015b, p. 3-16).

The P3 site is within the Coastal Energy Facilities (EC) sub-zone, which is intended to provide areas that allow for siting, construction, modification and maintenance of power generating facilities and electrical substations consistent with the Oxnard Coastal Zoning Ordinance, and with Policies 51, 52, 54, and 56 of the OCLUP. Additionally, the EC sub-zone is designed to provide a framework for coordinating the requirements and responsibilities of applicable city, state, and federal regulatory agencies vested with the authority for reviewing energy facility development (COO 2015c, SEC. 17-20). The OCLUP policies 51, 52, 54, and 56 are analyzed under the "Direct/Indirect Impacts and Mitigation" subsection below.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

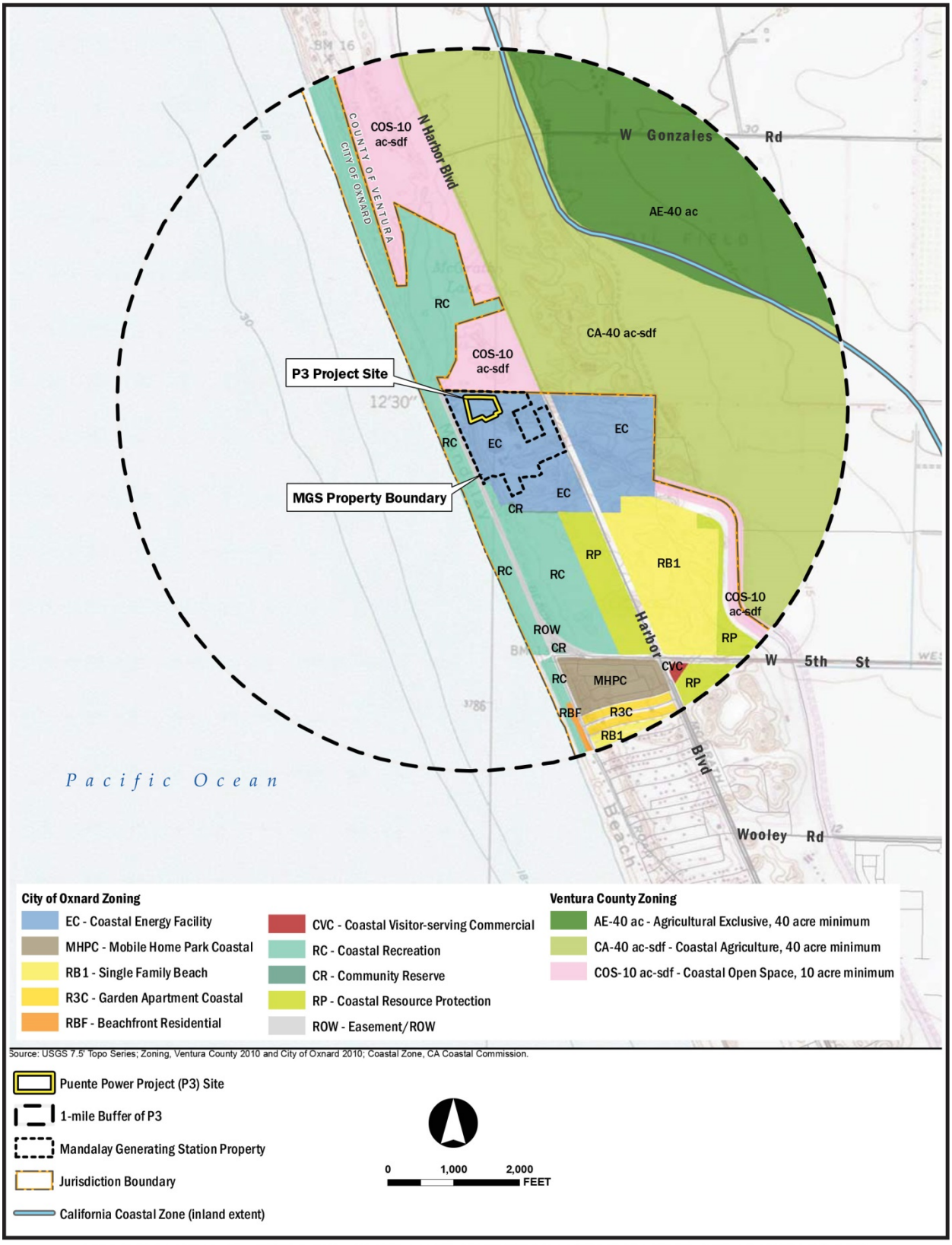
Staff has analyzed the information provided in the AFC and information acquired from other sources to determine consistency of the proposed P3 with applicable land use LORS and the proposed project's potential to have significant adverse land use-related impacts.

LAND USE - FIGURE 1
Puente Power Project (P3) - Designated Future Uses



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: AFC Figure 4.6-3

LAND USE - FIGURE 2
Puente Power Project (P3) - Zoning Designations



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: AFC Figure 4.6-4

METHODS AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

Significance criteria used in this document are based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines and performance standards or thresholds identified by 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 (FMMP) 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.
- 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 effect on surrounding properties.

[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.

[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).

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 P3 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 P3 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 P3 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 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 P3 would be located entirely within the site boundaries of an existing power plant that has operated in its current location since the late 1950s. Access to the proposed project would be through an existing right-of-way off North Harbor Boulevard, just south of the intersection of Gonzales Road and North Harbor Boulevard. There would not be a need to relocate any residences as a result of the P3. Therefore, the P3 would not physically divide or disrupt any community. 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 proposed P3 is not located within any Habitat Conservation Plan or Natural Community Conservation Plan and there would be no conflicts as a result of the proposed project.

CONFLICT WITH ANY APPLICABLE LAND USE PLAN, POLICY OR REGULATION

Staff evaluates 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(Cal. Code Regs., tit. 20, § 1744).

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(b)).

Staff's analysis of the project's consistency with applicable land use-related LORS is presented below. **Land Use Table 2** provides a summary of staff's LORS analysis.

Warren-Alquist Act

Section 25529 of the Warren-Alquist Act discusses the Energy Commission's statutory requirement for a public use area for facilities proposed in coastal zones. The Energy Commission shall require the establishment of an area for public use as a condition of certification of a facility proposed in a 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 AFC makes no provision for public access in the coastal zone. Staff looked at various potential areas in the Oxnard coastal zone to satisfy the public use requirement of the Warren-Alquist Act and has identified six possible options in proximity to the MGS.

1) P3 onsite access (near McGrath Lake) within the northern portion of the MGS property.

2) P3 onsite access (near McGrath Peaker area) within the southern portion of the MGS property.

3) Existing offsite public use access located on 5th Street and Mandalay Beach Road (north of the Oxnard Shores Mobil Home Park).

4) Existing offsite public use access located at the northwest corner of Harbor Boulevard and 5th Street.

5) P3 onsite access between McGrath State Park and Mandalay Beach City/County Park (via the 1,800 feet of beach frontage).

6) McGrath State Beach (north of P3) former state park and camping facility relocation and enhancement.

Staff identified Option 5 as the most practicable and feasible of the potential options, primarily because the Oxnard Coastal Land Use Plan, Chapter 3.7 Coastal Access and Recreation section includes a summary of existing access that addresses the McGrath and Mandalay area stating: “All but 1,800 feet of beach frontage from the Santa Clara River south to Fifth Street are public lands in the McGrath State Park and the Mandalay Beach City/County Park. The Southern California Edison Mandalay Beach electrical generating plant (now NRG) occupies 1,800 feet of ocean frontage between McGrath State Park and Mandalay Beach City/County Park. The plant’s ocean outfall is located in the middle of the frontage, which physically restricts lateral access. There is an existing 80-foot partially improved right-of-way for Mandalay Beach Road across the property. However, no agreement has ever been made concerning the exact nature of the public rights to the beach” (Oxnard Coastal Land Use Plan). Staff recognizes the city’s concern of public rights to the remaining 1,800 feet of beach frontage and the need to enhance the area for safe pedestrian travel. Furthermore, the Oxnard 2030 General Plan includes goal ICS-8.14 to ensure safe pedestrian circulation throughout the city including creating a physical link for pedestrians between parks and recreation facilities.

Staff anticipates the demolition of Units 1 and 2 would result in a substantial reduction of MGS’s wastewater discharge associated with the once-through cooling system. The remaining water discharge from MGS would primarily be from Unit 3, bearing cooling water and storm water. Staff believes discharges during power production alone would allow safe passage for pedestrians without augmenting the current footprint of the outfall riprap structure. The existing structure would continue to facilitate and direct MGS’s discharge to the ocean in accordance with its facility National Pollutant Discharge Elimination System permit.

In light of the foreseeable relocation and enhancement of McGrath State Beach (located north of P3) and the expansion of the Beach Walk at Mandalay (formerly named North Shore) development (located south of P3) pedestrian traffic along the beach would most likely increase and a boardwalk or pedestrian path linking McGrath Beach with recreation facilities to the south would be a welcome amenity for recreational use. Enhancement opportunities for a public use area include, but are not limited to, providing a public use easement or dedication of land to the city of Oxnard; implementation of a pedestrian path or boardwalk linking both McGrath State Beach and Mandalay Beach City/County Park; secure MGS outfall area; provide trash cans; and signs delineating sensitive habitat areas.

The applicant's Data Request Response #75 (PPP 2015c) acknowledges the requirement for public access and concurs with staff's recommendation that Option 5 is the most practical and feasible. The applicant agrees the implementation of Option 5 would require maintaining and keeping Beach Road visible and accessible for safe pedestrian use. Signage may be employed to increase public awareness of Beach Road and to identify sensitive habitat in the area. Staff does not want to preclude identification of other sites from the city, other agencies, or individuals, and proposes that a portion of the PSA workshop be dedicated to the discussion of a public use area that considers environmentally sensitive areas, fragile coastal resources, public safety, and land ownership. Staff will continue to work with the city of Oxnard, the applicant, and other agencies and individuals to designate a site that would satisfy the public access requirement of the Warren-Alquist Act.

California Coastal Act (Public Resources Code, §§30000-30900)

Section 30200 of the California Coastal Act states that Chapter 3, Coastal Resources Planning and Management Policies, contains the policies that "constitute the standards by which…the permissibility of proposed developments subject to the provisions of this division [of the Public Resources Code] are determined." While the P3 is under the exclusive jurisdiction of the Energy Commission, sections 30413(d) and (e) of the Coastal Act expressly authorize the Coastal Commission to participate in Energy Commission siting proceedings for any thermal power plant to be located within the coastal zone and provide findings with respect to specific measures needed to bring a project into conformity with the policies of the Coastal Act as well as policies of the certified local coastal program (LCP). Staff anticipates that the Coastal Commission's "30413(d)" report for the P3 will be received after publication of the Preliminary Staff Assessment (PSA). Below, staff has provided its preliminary analysis of the P3's conformity with the applicable Chapter 3 policies in Article 2 (Public Access), Article 5 (Land Resources), and Article 6 (Development). The project's conformity with policies in Article 4 (Marine Environment) is addressed in the **Biological Resources** section of this document.

Public Access Policies

Coastal Act section 30211 states: Development shall not interfere with the public's right of access to the sea where acquired through the use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.

Coastal Act section 30212 (a) states: Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects except where: (1) it is inconsistent with public safety, military security needs, or the protection of fragile coastal resources; (2) adequate access exists nearby; or (3) agriculture would be adversely affected. Dedicated access shall not be required to be opened to public use until a public agency or private association agrees to accept responsibility for maintenance and liability of the access.

While the P3 would not interfere with existing beach access, staff is working with the city of Oxnard, the applicant, and other agencies and individuals to designate a site for public access that would ensure public safety and security needs, protect fragile coastal resources, and assure that a public agency or private association agrees to accept responsibility for maintenance and liability of the access.

Land Resources Policies

Section 30240 (b) of the Coastal Act states: Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

Since the 36-acre MGS parcel is adjacent to McGrath Lake, McGrath State Beach and sensitive biological habitat along the northern property line, the **Biological Resources** section of this document provides analysis of how the proposed P3 would comply with this section of the Coastal Act. The **Visual Resources** section of this document addresses the proposed P3 visual impacts on surrounding land uses (including recreational resources).

From a land use perspective, decommissioning, demolition of MGS Units 1 and 2, and construction and operation activities of the proposed P3 would not significantly impact environmentally sensitive habitat areas and parks, including the McGrath Lake or McGrath State Beach, because the proposed P3 would be entirely within the fenced perimeter of the MGS.

Development Policies

Section 30250 of the Coastal Act states: New residential, commercial, or industrial development, except as otherwise provided in this division, shall be located within, contiguous with, 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 services and where it will not have significant adverse effects, either individually or cumulatively, on coastal resources.

Consistent with Section 30250, the P3 would be located within an existing developed industrial area with adequate resources to accommodate it. The P3 would be on 3 acres within the 36-acre site of the existing developed MGS. The MGS site has been used for energy generation purposes since the 1950s. No off-site expansion or use of additional property beyond the fenced perimeter of the MGS site would be necessary for either the construction or operation of the P3. Adequate public services are available in the area

to accommodate the P3, including existing potable water, natural gas, storm-water, process wastewater, sanitary pipelines, and electrical transmission facilities.

Additionally, the P3 would not create unmitigated significant adverse impacts, either individually or cumulatively in **Air Quality, Hazardous Materials Management, Noise and Vibration, Public Health, Transmission Line Safety and Nuisance, and Visual Resources,** and therefore would not result in any physical land use incompatibilities with the existing surrounding land uses. Each of these sections has proposed conditions of certification to reduce potential impacts to less than significant.

Therefore, the P3 would be consistent with Section 30250 because it would be located in an existing developed area able to accommodate it and would not have significant adverse effects, either individually or cumulatively, on coastal resources.

City of Oxnard General Plan

California law requires each local government to adopt a local general plan that reflects the goals and policies that guide the physical development of land within its jurisdiction (Gov. Code §§ 65300 et seq.). A general plan must contain at least seven elements: Land Use, Transportation, Housing, Conservation, Noise, Open Space, and Safety. The city of Oxnard's general plan (adopted October 2011) is implemented by its zoning ordinances and Coastal Zoning Ordinance. Staff has identified the following general plan policies as applicable to the P3.

Conservation and Open Space

Policy ER-2.3 is designed to promote areas for open space and reserve, preserve, and promote areas particularly suited for open space/recreational uses. Appropriate public access to these resources shall be preserved, enhanced, restored, and properly controlled.

The P3 onsite access (1,800 feet of beach frontage) between McGrath State Park (to the north) and Mandalay Beach City/County Park (to the south) is owned by the applicant. The applicant acknowledges the Warren-Alquist Act requires as a condition of certification that an area be established for public use. The establishment of a public access area also requires enhancement of such an area. Staff will work with the city of Oxnard, the applicant, and other agencies and individuals to designate a site and use that will satisfy this requirement.

Land Use Element

The project site is designated as PUE, which applies to large electrical generating and transmission facilities (COO 2015b, p. 3-13). The P3 site is referenced in the Oxnard General Plan as the Mandalay Generating Station. Chapter 3.5 (Land Use Designations and Standards) of the Oxnard General Plan states that because these types of industrial facilities are unique, development intensity is established on an individual basis

The following policies of the Land Use Element are relevant to the project; staff's analysis follows in italics.

Policy CD-16.5 requires high quality development standards that increase the efficient use of existing industrial and commercial development areas so as to preserve agricultural land and minimize adverse environmental impacts.

The P3 would be located within the site boundaries of an existing power generation facility and would rely on available services including potable water, natural gas, storm-water, process wastewater, sanitary pipelines, and electrical transmission facilities. The P3 is consistent with the current development patterns for the area established by the city of Oxnard General Plan Land Use Element, LCP and Zoning Ordinance, and would not impact agricultural land. The P3 would provide energy to support existing and future residents, businesses, and recreation. The P3 would not require the use of ocean water for cooling like the MGS. It is staff's position that the project would be consistent with this policy.

Policy CD-5.1 Industrial Clustering: Encourage the clustering of industrial uses into areas that have common needs and are compatible in order to maximize their efficiency.

Policy CD-5.2 Compatible Land Use: Ensure adequate separation between sensitive land uses (residential, educational, open space, healthcare) to minimize land use incompatibility associated with noise, odors, and air pollutant emissions.

Policy CD-5.3 Available Services: Encourage industrial activities to locate where municipal services are available including adequate storm drainage and water facilities, as well as easy access to multiple modes of transportation.

The P3 would *be constructed within the existing MGS property and would be on land already dedicated to energy generation. The P3 would be interconnected to the existing SCE switchyard, adjacent to the P3 site. The P3 would use natural gas supplied to the MGS site by the Southern California Gas Company (SoCal Gas) and would connect to a new gas metering station adjacent to the project site. The process water source and potable water source is already supplied by the city to the MGS property. Staff has verified that the P3 would not result in any physical land use incompatibilities with the existing surrounding land uses in the areas of* ***Noise and Vibration, Traffic and Transportation, Public Health, Air Quality, Hazardous Materials Management, and Soil and Water,*** *nor would it divide or disrupt an existing community. Staff concludes that the project would be consistent with these policies.*

Policy ICS-17.1 Electric Facilities: Ensure that electric facilities (such as the Southern California Edison generating facilities located within the city) are built in accordance with the California Public Utilities Commission regulations and incorporate feasible solar, wind, and other renewable sources of energy.[5]

[5] Once effective, the general plan amendment approved on June 7, 2016 by the city council of Oxnard will amend the language of Policy ICS-17.1 Electric Facilities to read: "Ensure that public and private, replacement and/or refurbished, electrical generation and/or transmission are built in accordance with the California Coastal Commission Sea Level Rise Policy Guidance, California Public Utilities Commission and/or California Energy Commission policies and regulations and incorporate feasible solar, wind, and other renewable sources of energy." (COO 2016a) Staff will address any inconsistencies between the P3

The applicant states that P3 would be sited, designed, constructed, and operated in accordance with California Public Utilities Commission regulations, which are listed in Chapter 2.0 of the AFC. The P3 would not incorporate solar, wind, or other renewable sources of energy. Please see the ***Alternatives*** *section of this document for a discussion of "preferred resources."*

Staff concludes that the proposed P3 would be consistent with the applicable policies of the Oxnard General Plan Land Use Element.

City of Oxnard Coastal Land Use Plan

The OCLUP is the supplemental development policy document to the Oxnard General Plan. Together, these two documents govern future development and character of the city of Oxnard's Coastal Zone. The applicable policies of the OCLUP have been adopted as ordinance under the EC sub-zone of the Oxnard Coastal Zoning Ordinance. Policies 51, 52, 54, and 56 of the OCLUP are applicable to the proposed P3 and are analyzed below.

Policy 51 states: All new industrial energy related development shall conform to the air quality regulations set forth by the Ventura County Air Pollution Control District, the air quality management plan, and New Source Review Rule 26.

Conditions *of Certification ensuring compliance with the air quality regulations set forth by the Ventura County Air Pollution Control District, the air quality management plan, and New Source Rule 26 are included in the* ***Air Quality*** *section of this document.*

Policy 52 states: Energy related development shall not be located in coastal resource areas including sensitive habitats, recreational areas, and archeological sites. All development adjacent to these resource areas or agricultural areas shall be designed to mitigate any adverse impacts.

The P3 would be constructed within the boundaries of the existing MGS power generating facility that has been in operation since the 1950s and would not encroach into any adjacent sensitive habitats, recreational areas, and archeological sites. The P3 would discontinue the use of once-through cooling technology at the site and reduce impacts to surrounding sensitive habitats. The P3 is not immediately adjacent to any agricultural areas and would not harm existing agricultural uses within the immediate vicinity.

Policy 54: All new energy related development shall be located and designed to minimize adverse effects upon public access to the beach.

The P3 would be constructed within the boundaries of the existing MGS and would have no adverse *effects on public access. While the P3 would have no adverse effects on any existing public access, staff is working with the city of Oxnard, the applicant, and others to designate a site for public access to satisfy the requirements of the Coastal Act and the Warren-Alquist Act.*

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and local land use plans arising from approval of the general plan amendment in the Final Staff Assessment.

Policy 56: No energy related development shall be located seaward of the 100 year flood/wave run-up line as designated by the U.S. Department of Housing Insurance Program Administration and the land use map of the Oxnard Land Use Plan.

*The project owner is not proposing to construct the P3 facility within the designated 100 year flood/wave run-up line. Discussion and analysis of the designated 100 year flood/wave run-up line is contained in the **Soils and Water** section of this document.*

Staff concludes that the proposed P3 would be consistent with the applicable policies of the OCLUP.

City of Oxnard Municipal Code

Zoning Ordinance and Coastal Zoning Ordinance

The P3 site is located in the EC sub-zone within the Oxnard Coastal Zone. The specific purpose of the EC sub-zone is to provide areas that allow for siting, construction, modification, and maintenance of coastal dependent power generating facilities and electrical substations consistent with the OCLUP. Additionally, the EC zone is designed to provide a framework for coordinating the requirements and responsibilities of applicable city, state and federal regulatory agencies vested with the authority for reviewing energy facility development (COO 2015c, Sec. 17-20 (A)).

Staff has analyzed the proposed P3 using design standards from the Oxnard Coastal Zoning Ordinance that would be required for projects located within the coastal zone (Chapter 17-20(C)(3), Article IV 17-46 (B)(1-12) “Design Standards”). Analysis of whether the P3 meets the required findings is provided in italics below.

(1) The proposed development will be of a quality and character which is compatible with the surrounding area and harmonizes with existing development.

(2) The design will improve the community's appearance by avoiding excessive variety and monotonous repetition.

*The P3 proposes to demolish both MGS Units 1 and 2. As stated in the **Visual Resources** section of this document, the existing exhaust stack, which does not match or harmonize with the surrounding area, would also be demolished. The new facility would have a smaller footprint, a lower profile, and a shorter stack (188 feet); the P3 would not be considered monotonous because of the varying heights, masses, and densities of the power generation facility, ancillary structures, switchyards, and exhaust stack.*

(3) Proposed signage will be an integral architectural feature which does not overwhelm or dominate the structure or object it is attached to.

The existing MGS facility currently has an existing monument sign at the entrance of the facility surrounded with landscaping. No new signage is being proposed.

(4) Lighting will be stationary and deflected away from adjacent properties.

(5) Mechanical equipment, storage and trash areas and utilities will be architecturally screened from view.

*The **Visual Resources** section of this document concludes that lighting impacts on adjacent properties would be minimized and mechanical equipment, storage and trash areas, and utilities for the P3 would be screened.*

(6) The plans show proper consideration for the relationship between the existing and finished grades of the site to be improved and adjacent properties;

*The **Visual Resources** analysis states that the topography of the P3 site is almost entirely flat, sloping seaward and bounded by sand dunes along the coastline. The existing MGS facility is on relatively level ground at an elevation of approximately 14 feet mean lower low water (MLLW). Sand dunes and a flood protection berm border the facility and range in elevation from 20 to 30 feet MLLW. The P3 would be constructed with a lower profile and smaller footprint than the MGS facility, therefore improving the relationship between the existing and finished grades of the site to be improved and the adjacent properties.*

(7) The proposed development or modification will not, in its exterior design and appearance, be so at variance with the appearance of existing buildings and development in the neighborhood as to cause the nature of the local environment to materially depreciate in appearance;

The EC sub-zone of the Oxnard Coastal Zoning Ordinance allows power generation facilities. The P3 facility would be located within the boundaries of an existing power plant that has operated in its current location since the late 1950s and would reuse existing ancillary facilities within the MGS site. The P3 would be significantly smaller in size and occupy a smaller footprint than the existing MGS when demolition of Units 1 and 2 and the 200-foot exhaust stack occurs. The proposed stack (188 feet) would be smaller than the existing stack. Staff's analysis shows that the P3 would comply with all applicable development standards of the EC sub zone.

(8) The proposed design is compatible with existing development in the area in terms of scale, height, bulk, materials, cohesiveness, colors and the preservation of privacy;

(9) The proposed design promotes a harmonious transition in terms of scale and character between areas of different land use designations;

*The EC sub-zone of the Oxnard Coastal Zoning Ordinance allows power generation facilities; additional analysis for materials, cohesiveness, colors and preservation of privacy is provided in the **Visual Resources** section of this document. The project owner is proposing demolition of the existing MGS Units 1 and 2 including the 200-foot exhaust stack. The P3 facility would be significantly smaller in size, and occupy a smaller footprint than the existing MGS. Staff's analysis shows that the P3 would comply with all applicable development standards of the EC sub zone.*

(10) All building elevations have been architecturally treated in a uniform manner, including the incorporation within the side and rear building elevations of some or all of the design elements used for the primary facades;

*This design standard would not be applicable to power generation facilities or combustion gas turbines. However, surface treatments would be applied to make the facility harmonious with the natural environment and limit reflectivity, as analyzed in the **Visual Resources** section of this document.*

(11) The plans provide for adequate on-site vehicular and pedestrian circulation.

*The P3 would be required to provide adequate on-site vehicular and pedestrian circulation, as it relates to worker safety and hazardous conditions that are typically associated with a power generation facility. The analysis contained in the **Worker Safety and Fire Protection** section of this document addresses on-site and vehicular and pedestrian circulation.*

(12) The main entrance to the dwelling unit or commercial or industrial building provides independent access for the physically impaired.

The P3 proposes to use the existing on-site administration buildings, which are required by law to provide handicapped access consistent with California Uniform Building Code Standards.

Staff concludes that the proposed P3 would be consistent with the design standards required by Oxnard Zoning Code Chapter 17-20 (C)(3), 17-46 Article IV (B)(1-12).

Section 17-39 (B)(2)(a) Coastal Access and Recreation

(B) Applicability and specific standards - All development within the Oxnard Coastal Zone which will have an effect on public access to, and enjoyment of, the coastline shall comply with the provisions of this section.

(2) Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development except where:

(a) The access is inconsistent with public safety, military security needs, or the protection of fragile coastal resources.

While the P3 would not interfere with existing beach access, staff is working with the city of Oxnard, the applicant, and other agencies and individuals to designate a site for public access that would address these provisions of the municipal code.

Coastal Development Permit Findings (COO 2015c, SEC. 17-57 (C)(5)(b)):

The Coastal Act requires each local government with land area located within the coastal zone to prepare an LCP for management of such land areas. Once the Coastal Commission certifies an LCP, the authority to issue coastal development permits for development within the coastal zone is delegated to the local jurisdiction. (Pub. Resources Code, § 30519(a)). But for the exclusive jurisdiction of the Energy Commission to license the P3, the city of Oxnard would make certain findings to approve a coastal development permit. Analysis of whether the P3 meets the required findings is provided in italics below.

1. The proposed use is conditionally permitted within the subject sub-zone and complies with all of the applicable provisions of this chapter.

   The P3 project site is located in the EC sub-zone as identified by the Oxnard Coastal Zoning. The specific purpose of the EC sub-zone is to provide areas that allow for siting, construction, modification, and maintenance of coastal dependent power generating facilities and electrical substations consistent with the OCLUP. Staff has analyzed the proposed project using design standards from the Oxnard Zoning Code to determine consistency with the EC-subzone. See the analysis contained in the Zoning Ordinance and Zoning Ordinance for the Coastal Zone subsection above. Based on the analysis of the design standards in the Oxnard Zoning Code, staff has concluded that the P3 would be consistent with the intent of the city of Oxnard EC sub-zone.

2. The proposed use would not impair the integrity and character of the subject sub-zone.

   *The P3 is located within the boundaries of an existing power generation facility that has been in service since the 1950s and, as shown above, would be consistent with the design standards required for projects located in the EC-sub-zone. Areas of concern for **Visual Resources** and **Worker Safety and Fire Protection** have been addressed under required design standards. Both technical areas have concluded that no significant impacts associated with the proposed P3 would impair the integrity and character of the EC sub-zone**.***

3. The location and intensity of use of the subject site would be physically suitable and would protect and maintain adjacent coastal resources.

   *With the incorporation of appropriate mitigation measures, no adjacent coastal resources would be negatively affected by the proposed P3 as analyzed in the **Biological Resources** section of this document. In addition, the P3 facility would be significantly smaller in size, and occupy a smaller footprint than the existing MGS once Units 1 and 2 are demolished. The P3 would eliminate the use of ocean water for once-through cooling at the site. Staff's analysis shows that that the P3 project would comply with all applicable development standards of the EC sub zone.*

4. The proposed use would be compatible with the land uses presently on the subject site.

   The P3 would be constructed within the boundaries of the existing MGS power generation facility that has been in service since the 1950s. The P3 would be compatible with the land uses presently on the subject site. In addition there would be no significant impacts in ***Worker Safety and Fire Protection, Waste Management, Hazardous Materials Management, Public Health, Water Resources, Traffic and Transportation, Visual Resources, and Transmission Line Safety and Nuisance*** *that would cause an incompatibility with existing on-site land uses.*

5. The proposed use would be compatible with existing and future land uses within the sub-zone and the general area in which the proposed use would be located.

   Staff's analysis in subsection "City of Oxnard Municipal Code" shows that the proposed P3 would be compatible with existing land uses within the sub-zone and the general area in which the proposed use would be located. The MGS site would provide the existing infrastructure necessary to operate a power generating facility (i.e. switchyard, transmission towers, and gas, water, and sewer lines). Other heavy industrial uses (SCE McGrath Peaker Plant and oil wells) are located in the immediate vicinity of the *MGS site.*

6. There are adequate public services for the proposed use, including, but not limited to, fire and police protection, water, sanitation and public utilities and services to ensure that the proposed use would not be detrimental to public health and safety.

   The ***Socioeconomics*** *and* ***Worker Safety and Fire Protection*** *sections of this document show that adequate public services are available in the area to accommodate the P3. The P3 would utilize existing potable water, natural gas, storm-water, process wastewater, sanitary pipelines, and electrical transmission facilities. The proposed project at the existing location would not be detrimental to public health and safety as analyzed in the following areas:* ***Traffic and Transportation, Worker Safety and Fire Protection, Waste Management, Hazardous Materials Management, Public Health, Water Resources, and Transmission Line Safety and Nuisance.***

7. The proposed use will provide a type and level of public access consistent with the access policies and standards of the certified Oxnard Coastal Land Use Plan.

   Staff is currently working with the city of Oxnard, the applicant, and other agencies and individuals to identify a beach access that will satisfy the requirements of the Warren-Alquist Act and be consistent with the policies and standards of the Oxnard Coastal Land Use plan.

8. The proposed use would be appropriate in light of an established need, based upon the underlying goals and objectives of specific Oxnard Coastal Land Use Plan policies, applicable to the proposed location.

   The existing MGS power generation facility has been in-service since the 1950s at the present location; construction and operation of the P3 would be a continuation of the existing use of the site. The P3 would be an appropriate use based on the consistency determinations made with the Oxnard General Plan, Zoning Ordinance, as well as Coastal Zoning Ordinance.

9. The proposed use would be consistent with all of the applicable policies of the certified Oxnard Coastal Land Use Plan.

   Staff has analyzed policies 51, 52, 54, and 56 of the OCLUP and concludes that the proposed P3 would be consistent with the applicable policies of the OCLUP, as discussed under the subsection "City of Oxnard Coastal Land Use Plan".

City of Oxnard Urgency Ordinances

On July 1, 2014 the Oxnard City Council unanimously adopted Ordinance No. 2882, an interim urgency measure imposing a moratorium on the approval of any special use permit, coastal development permit, or any other discretionary city permit for the construction, expansion, replacement, modification or alteration of any facilities for the on-site generation of electricity with a capacity greater than 25 MW on any property located within the Oxnard Coastal Zone. Shortly after, the Oxnard City Council adopted Ordinance No. 2891, which extended the urgency moratorium to June 30, 2016. The council also adopted two resolutions (Resolution No.s 14,655 and 14,656) authorizing the proposal and submittal of an LCP Planning Grants Joint Application Form to the California Coastal Commission. The application requested a total of $150,000 in grant money to amend the city's LCP. The funding would be used to prepare a comprehensive sea-level rise (SLR) analysis, adaptation report, and provide the necessary funding required for an LCP update. The city contends that the new SLR analysis would create the necessity to update the LCP (COC 2016a).

On February 2, 2016, the Oxnard City Council adopted a resolution of intention to amend and update the Oxnard LCP, Planning and Zoning Permit (PZ) No. 15-410-03, and authorized that select amendments related to urgency Ordinance 2891 that prohibit the expansion of existing or development of new electrical generating facilities within the Oxnard Coastal Zone be adopted in advance of the comprehensive LCP update.

COMPLIANCE WITH LORS

Staff's independent analysis of the P3 concludes that the project would likely comply with all applicable LORS. While staff believes that the project would likely conform to the California Coastal Act and city of Oxnard LCP, staff has not yet received the review and proposed findings of the Coastal Commission. **Land Use Table 2** summarizes the P3 conformance with applicable LORS.

Land Use Table 2
Project Compliance with Applicable Laws, Ordinances, Regulations, and Standards

Applicable LORS	Description of Applicable LORS	Consistency Determination	Basis for Consistency
State			
Warren-Alquist Act, Public Resources Code (PRC) § 25529	The Energy Commission shall require public access to coastal resources as a condition of certification of a facility proposed in the Coastal Zone.	Pending	Condition of Certification **LAND-1**, when finalized would satisfy this requirement.
California Coastal Act- (PRC, § 30200, et seq.)	The California Coastal Act establishes a comprehensive scheme to govern land use planning along the entire California coast.	Yes	The basis for consistency for the applicable Coastal Act sections is discussed below.
PRC, § 30211	Development shall not interfere with the public's right of access to the sea.	Yes	The P3 would be constructed within the existing MGS site and would not interfere with coastal access. Although the P3 does not interfere with public access, Condition of Certification **LAND-1**, if finalized in the Final Decision, would provide a new public access near the site.
PRC, § 30212(a)	Public access…shall be provided…except where it is inconsistent with public safety, military security needs, or the protection of fragile coastal resources; adequate access exists nearby; or agriculture would be adversely affected.	Yes	Public access to the beach exists near the site at West 5th Street to the south, and McGrath Beach State Park to the north. Condition of Certification **LAND-1**, if finalized in the Final Decision, would provide a new public access near the site.
PRC, § 30240(b)	Development in areas adjacent to environmentally sensitive habitat areas, parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.	Yes	The P3 would be located entirely within the MGS site and would use existing infrastructure in an existing developed industrial area.
PRC, § 30250	New development shall be located within, contiguous with, or in close proximity to, existing developed areas able to accommodate it.	Yes	The P3 would be consistent with Section 30250 because it would be located in an existing developed area able to accommodate it and would not have significant adverse effects, either individually or cumulatively, on coastal resources.

Applicable LORS	Description of Applicable LORS	Consistency Determination	Basis for Consistency
LOCAL			
City of Oxnard General Plan Land Use Element Policy CD-1.6 Policy CD- 5.1 Policy CD- 5.2 Policy CD- 5.3 Policy CD-16.5 Policy ICS-17	The PUE land use designation applies to large electrical generating and transmission facilities. These policies address various land use compatibility issues and other standards.	Yes	The project site is designated PUE in the Oxnard General Plan; power generation is an allowable use. The P3 would be located within the boundaries of an existing power generation facility. Staff's analysis shows that the P3 would be consistent with the applicable Land Use Element policies of the Oxnard General Plan in subsection "City of Oxnard General Plan", above.
City of Oxnard Coastal Land Use Plan (OCLUP) Policies 51, 52 54, & 56	The OCLUP is the supplemental development policy document to the Oxnard General Plan. Together, these two documents govern future development and character of the city of Oxnard's Coastal Zone.	Yes	Staff's analysis of the applicable policies of the OCLUP in subsection "City of Oxnard Coastal Land Use Plan" shows the P3 is consistent with these policies.
City of Oxnard Zoning Ordinance Chapter 17: Coastal Zoning Ordinance Section 17-20: EC Coastal Energy Facilities, sub-zone	The Coastal Energy Facilities (EC) Sub-Zone is established by this chapter with prescribed findings for coastal development. The purpose of the EC Sub Zone is to provide areas that allow for siting, construction, modification, and maintenance of power generating facilities consistent with the OCLUP.	Yes	Staff analyzed the proposed P3 using the design standards from the Oxnard Coastal Zoning Ordinance for projects located within the coastal zone (Chapter 17-20(C)(3), Article IV 17-46 (B)(1-12) "Design Standards") and concluded the P3 meets the required findings.
Section 17-57 (C)(5)(b) Conditionally Permitted Uses	States that electrical power generating facilities are permitted subject to approval of a coastal development permit.	Yes	Staff's analysis in subsection Coastal Development Permit Findings (COO 2015c, SEC. 17-57 (C)(5)(b)) above shows the P3 would be consistent with these findings.
Section 17-20(C)(2), Article III 17-39(B)(2)(a):	Requires public access be provided from the nearest public roadway to the shoreline for new development	Pending	Condition of Certification **LAND-1,** when finalized, would satisfy this requirement.

Applicable LORS	Description of Applicable LORS	Consistency Determination	Basis for Consistency
Coastal Access and Recreation	along the coast unless the access would be inconsistent with public safety or protection of fragile coastal resources.		

LAND USE COMPATIBILITY

The proposed P3 would be located entirely within the boundary of the existing MGS facility. The MGS property has been used as a power generation facility since the 1950s. The proposed P3 is consistent with the city of Oxnard land use designations and coastal zoning and would not constitute a change in the current development pattern of the city of Oxnard, as established by the city of Oxnard adopted General Plan. Furthermore, the project is compatible with the existing ancillary facilities of the MGS, which would be reused to support P3, such as the SoCal Gas natural gas pipeline serving the site, the existing onsite SCE 230-kV switchyard, and the existing connections to the city of Oxnard potable water system and sanitary sewer system.

As noted in the discussion above under the subsection titled “Physical Disruption or Division of an Established Community” and in **Land Use Table 2,** development of the proposed project and its associated facilities would not divide an established community.

A power plant may be an incompatible land use if it would cause an unmitigated noise, odor, public health or safety hazard, visual, or traffic effect on surrounding properties.

Staff has conferred with other technical staff in the following areas: **Air Quality, Traffic and Transportation, Worker Safety and Fire Protection, Waste, Hazardous Materials Management, Public Health, Water Resources, and Transmission Line Safety and Nuisance**. Each has incorporated specific conditions of certification to avoid or mitigate potential negative environmental impacts. Therefore, staff concludes that the proposed P3 would not result in any physical land use incompatibilities with the existing surrounding land uses.

CUMULATIVE 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 3 displays the reasonably foreseeable significant sized development projects within approximately one-mile of the project site in the city of Oxnard.

Land Use Table 3
Cumulative Projects

Project Title	Location	Project Description	Status of Project
Beachwalk on the Mandalay Coast (formerly North Shore Subdivision)	NE corner of W Fifth St and Harbor Blvd, Oxnard	183 single-family homes, 109 detached condos, and on-site amenities.	Plan Check, Dirt, gravel and rock movement. Submitted plans for off-site improvements for Harbor Boulevard - widening, etc. No active permits pulled for houses yet
Avalon Homes Subdivision	Catamaran St, Oxnard	Coastal Development Permit for 64 single-family homes and a tentative tract map for 16 parcels (4 houses per parcel) on an 8.1-acre parcel.	Proposed - City currently preparing Draft EIR
Anacapa Townhomes	5001 W Wooley Rd, Oxnard	Coastal Development Permit for 70 condominiums in 5 buildings on a 3.5 acre property, and variance for setbacks.	Plan Check - On hold due to lack of funds. Owner may sell project.

Source: EXECUTIVE SUMMARY Table-1 P3 - Master List of Cumulative Projects

The following topics have been analyzed with regard to cumulative land use impacts.

AGRICULTURE AND FOREST

The P3 as proposed would not have any impacts to agricultural or forest lands or conflict with any land that is zoned for agricultural purposes and therefore, would not contribute to cumulative impacts related to this land use topic.

PHYSICAL DISRUPTION OR DIVISION OF AN ESTABLISHED COMMUNITY

The P3 would be located entirely within the boundaries of an existing power plant facility that has been in operation since the 1950s. The project is situated on land designated and zoned for public utility uses, including electrical generation facilities. The P3 would not physically disrupt or divide an established community and would not contribute to a cumulative impact in this land use topic.

CONFLICT WITH ANY APPLICABLE HABITAT OR NATURAL COMMUNITY CONSERVATION PLAN

The P3 would not conflict with any habitat or natural community conservation plans and would not contribute to any cumulative impacts in this land use topic.

CONFLICT WITH ANY APPLICABLE LAND USE PLAN, POLICY OR REGULATION

Staff's preliminary analysis shows that the project would not conflict with any other applicable land use plan, policy, or regulation of an agency with jurisdiction, with the inclusion of the proposed condition of certification.

NOTEWORTHY PUBLIC BENEFITS

Staff is working the city of Oxnard, the applicant, and other interested parties to ensure compliance with the Warren-Alquist Act and the Coastal Act by creating a public use area and public benefit in proximity to the P3.

CONCLUSIONS AND RECOMMENDATIONS

The proposed P3 would be located entirely within the existing MGS, an operating power plant site, in the city of Oxnard.

Staff concludes the P3:

- 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 be consistent with development standards of the Coastal Energy Facilities (EC) sub-zone.
- Would be consistent with the current development patterns for the area established by the city of Oxnard General Plan Land Use Element, LCP, and Zoning Ordinance.
- Would be consistent with California Coastal Act policies pertaining to coastal resources and land use.
- Would not result in any physical land use incompatibilities with the existing surrounding land uses.
- 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.

Staff will finalize Condition of Certification **LAND-1** in the FSA, to ensure that the P3 would conform to the Warren-Alquist Act provision that facilities in the coastal zone provide an area for public access and use.

PROPOSED CONDITION OF CERTIFICATION

Staff will finalize this condition of certification in the FSA to meet the requirements of the Warren-Alquist Act.

LAND-1 The project owner shall establish an area for public use to meet the requirement of Public Resources Code Section 25529. The project owner shall make necessary improvements to the area to make it available for public access and use, consistent with security, public safety, and protection of fragile coastal resources. The project owner shall maintain the public access area for the life of the project.

Verification: The project owner shall provide proof to the compliance project manager (CPM) prior to the start of operation that the public use area is available for public access and use. The project owner shall provide evidence in the Annual Compliance Reports of the activities to maintain the public use area.

REFERENCES

PPP 2015a – NRG Energy Center Oxnard LLC/John Chillemi (TN 204219-1 – 204220-14). Application for Certification, dated April 13, 2015. Submitted to Robert Oglesby/CEC/Docket Unit on April 16, 2015.

PPP 2015b – NRG Energy Center Oxnard LLC/George L. Piantka (TN 204859). Data Adequacy Supplemental Response, dated June 1, 2015. Submitted to Jon Hilliard/CEC/Docket Unit on June 2, 2015.

PPP 2015c – Applicant's Responses to City of Oxnard Data Request Set 3 (68-79). (TN 206458). Submitted on October 30, 2015.CEC/Docket Unit October 30, 2015.

PPP 2015d – Request that the California Coastal Commission Revoke Grant Funding Provided to the City of Oxnard Due to Improper Use of Funds Latham & Watkins LLP (TN 206681). Submitted on November 18, 2015. CEC/Docket Unit on November 18, 2015.

PPP 2015e – Letter to Chris Williamson re Opposition to Proposed Zoning Amendments Targeted at NRG's Coastal Power Plants (TN 20668) Latham & Watkins LLP. Submitted on November 19, 2015. CEC/Docket Unit on November 19, 2015.

PPP 2015f – Latham & Watkins LLP Project Enhancement and Refinement, Demolition of Mandalay Generating Station Units 1 and 2 (TN 206698). Submitted on November 19, 2015. CEC/Docket Unit on November 19, 2015.

California Energy Commission

CEC 2015a –Report of Conversation (ROC)-CEC and staff and city of Oxnard staff. ROC between CEC planning staff and city of Oxnard Staff. October 27, 2015. (TN 206441). CEC/Docket Unit October 27, 2015.

CEC 2015b –Report of Conversation between Jon Hilliard of the CEC and Chris Williamson, from the city of Oxnard Planning Services (TN 206507). Submitted on November 3, 2015. CEC/Docket Unit on November 3, 2015.

CEC 2015c – Report of Conversation with CEC Staff and Kathleen Mallory from city of Oxnard Planning Department. (TN 206648). Submitted on November 16, 2015. CEC/Docket Unit on November 17, 2015.

CEC 2015d –Report of Conversation between CEC Staff and Chris Williamson, Principal Planner, city of Oxnard re: Site Alternatives (TN 206666). Submitted on November 18, 2015. CEC/Docket Unit on November 18, 2015.

CEC 2016a – Report of Conversation (ROC) with city of Oxnard Planning Services. ROC between CEC staff and city of Oxnard Principal Planner Chris William regarding status of P3, Oxnard's Local Coastal Plan (LCP) update, and draft Flood Maps (TN 207181). Submitted to CEC/Docket Unit on January 5, 2016.

CEC2016b –California Energy Commission Staff Data Request Set 3 Applicant NRG Oxnard Energy Center, LLC (TN 207313). Submitted to CEC/Docket Unit on January 14, 2016.

CEC 2016c – Email from Applicant (NRG Puente) Clarifying the Schedule for Decommissioning and Demolition of Existing Mandalay Generating Station Units 1 and 2 as Proposed as Part of P3 Activities (TN 208186). Submitted to CEC/Docket Unit on January 20, 2016.

City of Oxnard

COO 2015a – City of Oxnard Development Services Staff Report to the Planning Commission for Proposed Local Coastal Plan Amendment, Coastal Zone Text Amendment (TN 206616). Submitted on November 13, 2015. CEC/Docket Unit on November 13, 2015.

COO 2015b – City of Oxnard 2030 General Plan. http://oxnardmedia.s3-website-us-west-1.amazonaws.com/developmentservices/planning/2030GeneralPlan/2030GeneralPlanGoals&PoliciesOctober2011W.pdf. Accessed on May 2015.

COO 2015c – City of Oxnard Coastal Zoning Ordinance Title 17. http://library.amlegal.com/nxt/gateway.dll/California/oxnard/oxnardcaliforniacodifiedordinances?f=templates$fn=default.htm$3.0$vid=amlegal:oxnard_ca. Accessed May 2015.

COO 2016a – City of Oxnard PZ 16-620-01 2030 General Plan Amendment. City Council, June 7, 2016. http://oxnard.granicus.com/MetaViewer.php?view_id=44&clip_id=3382&meta_id=162784. Accessed June 9, 2016.

NOISE AND VIBRATION

Edward Brady and Shahab Khoshmashrab

SUMMARY OF CONCLUSIONS

If built and operated in conformance with the proposed **Noise and Vibration** conditions of certification, the Puente Power Project (P3) would comply with all applicable noise and vibration laws, ordinances, regulations, and standards (LORS) and would produce no significant direct or cumulative adverse noise impacts on people within the project area, including the environmental justice population.

Staff retains the responsibility to monitor the enforcement of the conditions of certification listed herein. Staff would work under the authority of the Energy Commission's compliance project manager (CPM) to monitor and review the reporting of project performance during construction, demolition, and the full term of operation, including facility closure.

INTRODUCTION

The construction, demolition, and operational activities associated with any power plant create noise, or unwanted sound. The character and loudness of the noise, the times of day or night that it is produced, the duration and frequency of the occurrence of the noise, 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 noise impacts. In some cases, vibration may be produced as a result of power plant construction practices such as pile driving. The ground-borne energy of vibration may have the potential to cause nuisance and structural damage.

The purpose of this analysis is to identify and examine the likely noise and vibration impacts from the construction and operation of the P3 power block to be located on the site of the existing Mandalay Generating Station (MGS) and from the demolition of the MGS existing conventional steam turbine Units 1 and 2 located on the same site. Staff recommends procedures to ensure that the resulting noise and vibration impacts would be adequately mitigated to comply with applicable 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** at the end of this section.

SETTING

The proposed P3 project, a single combustion turbine generator unit with a nominal capacity of 262 MW, would be located within the existing MGS site at 393 North Harbor Blvd, Oxnard, California. The site is bordered by sand dunes and the Pacific Ocean to the west; McGrath Lake State Park and land owned by SunCal to the north; industrial uses to the north, south, and east; and agricultural uses farther to the east.

As a part of this project, the existing 430-MW MGS Units 1 and 2, a pair of conventional steam turbine generators, would be demolished. The 130-MW MGS Unit 3, a peaking combustion turbine generator, will remain on-line and operational.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Noise Table 1 below identifies the noise and vibration LORS related to P3.

Noise Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable LORS	Description
Federal:	
Occupational Safety & Health Act, Title 29, Code of Federal Regulations, § 1910.95	Protects workers from the effects of occupational noise exposure.
U.S. Environmental Protection Agency Guidelines	Assists state and local government entities in development of state and local LORS for noise.
Federal Transit Administration	Establishes thresholds for ground-borne vibration associated with construction of rail projects; also applied to other types of projects.
State:	
California Government Code, § 65302(f)	Encourages each local governmental entity to perform noise studies and implement a noise element as part of its general plan.
State of California, Office of Noise Control, Model Community Noise Control Ordinance	Provides guidance for acceptable noise levels in the absence of local noise standards.
California Occupational Safety & Health Act (Cal-OSHA): Title 8, California Code of Regulations, §§ 5095-5099 (Article 105)	Protects workers from the effects of occupational noise exposure.
California Department of Transportation (Caltrans), Transportation and Construction Vibration Guidance Manual	Establishes guidelines for assessing the impacts of ground-borne vibration associated with pile driving.
Local:	
Oxnard City Code, Noise Ordinance, Article XI, Sound Regulation	Provides exterior noise limits Exempts construction between 7 a.m. and 6 p.m. weekdays and Saturdays from the provisions of Article XI, including the above noise limits.
City of Oxnard General Plan Chapter X, Noise Element	References the City of Oxnard Noise Ordinance limits.
County of Ventura Construction Noise Threshold Criteria and Control Plan	Provides noise limit requirements for construction work.
Ventura County General Plan, Chapter 2.16, Noise	Provides noise limits for ongoing noise generators.

FEDERAL

Under the Occupational Safety and Health Act of 1970, the Department of Labor, Occupational Safety and Health Administration (OSHA) adopted regulations Title 29, § 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, Noise Table A4** at the end of 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 architectural damage for conventional sensitive structures is a peak particle velocity of about 0.2 inches per second (in/sec).

STATE

California Government Code, § 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). This is consistent with the definition in **Noise Appendix A**, **Noise Table A1**, last row, in this analysis.

The California Occupational Safety and Health Administration (Cal-OSHA) has adopted 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**, **Noise Table A4**).

In September 2013, the California Department of Transportation (Caltrans) released the Transportation and Construction Vibration Guidance Manual, available at http://www.dot.ca.gov/hq/env/noise/pub/TCVGM_Sep13_FINAL.pdf. This manual includes the FTA method and findings. For pile driving impacts, the manual uses a method based on the force of the pile driver as well as soil considerations in the calculation of vibration levels. Thus, it is a bit more robust analysis than the FTA's and so, staff uses the vibration criteria in this manual for pile driving associated with power plants. The Caltrans manual states that for construction activities that generate vibration, e.g., pile driving, the threshold of human response begins at a peak particle velocity of 0.16 in/sec. This is characterized by Caltrans as a "distinctly perceptible" event with an incident range of transient to continuous (Caltrans. *Transportation and Instruction Vibration Guidance Manual*, September 2013. Report No. CT-HWANP-RT-13069.25.3, Table 20).

LOCAL

City of Oxnard LORS

The project is located within the city limits of Oxnard, an incorporated city within Ventura County. The Oxnard City Code, Noise Ordinance, Article XI, Sound Regulation, applies to noise. The city of Oxnard has also established noise compatibility guidelines in the General Plan Noise Element for Oxnard (Chapter X) which references the City of Oxnard Noise Ordinance limits.

Sections 7-185 and 7-188 of Article XI apply to the project. According to § 7-185, the maximum exterior levels that are considered acceptable for residential uses are 55 dBA L_{50}[1] between 7 a.m. and 10 p.m., and 50 dBA L_{50} between 10 p.m. and 7 a.m. Section 7-188(D) exempts construction between 7 a.m. and 6 p.m. weekdays and Saturdays from the provisions of Article XI, including the above noise limits.

Ventura County LORS

Although the project is located within the Oxnard city limits, one of the project's noise-sensitive receptors, identified as long-term monitoring location 2 (LT-2), is located within the unincorporated Ventura county limits north of the project site. Thus, this analysis includes the county's noise limit requirements for this receptor. The noise LORS applicable to LT-2 are the County of Ventura Noise Threshold Criteria and Control Plan and the Ventura County General Plan.

County of Ventura Construction Noise Threshold Criteria and Control Plan (County of Ventura 2010) provide the following outdoor construction noise limits for noise-sensitive receptors, which staff uses to establish the project's LORS-related construction and demolition thresholds at LT-2.

- Between 7 a.m. and 7 p.m. (day), the greater of 55 dBA hourly L_{eq} or the existing ambient hourly L_{eq} plus 3 dBA.

[1] For the definition of the L_{50} and other sound metrics, see **NOISE APPENDIX A**, **Noise Table A1**.

- Between 7 p.m. and 10 p.m. (evening), the greater of 50 dBA hourly L_{eq} or the existing ambient hourly L_{eq} plus 3 dBA.
- Between 10 p.m. and 7 a.m. (night), the greater of 45 dBA hourly L_{eq} or the existing ambient hourly L_{eq} plus 3 dBA.

Ventura County General Plan, Hazards Appendix, Chapter 2.16 Noise (County of Ventura 2013), specifies the following (long-term) exterior noise limits for noise-sensitive receptors, which staff uses to establish the project's LORS-related operational thresholds at LT-2.

- Between 6 a.m. and 7 p.m., the greater of 55 dBA hourly L_{eq} or the existing ambient hourly L_{eq} plus 3 dBA.
- Between 7 p.m. and 10 p.m., the greater of 50 dBA hourly L_{eq} or the existing ambient hourly L_{eq} plus 3 dBA.
- Between 10 p.m. and 6 a.m., the greater of 45 dBA hourly L_{eq} or the existing ambient hourly L_{eq} plus 3 dBA.

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 XII 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.

Staff, in applying Item 3 above to the analysis of this and other power plant projects, concludes that an increase in background noise levels up to and including 5 dBA is less than significant, and an increase of above 5 dBA could be either significant or less than significant depending upon the circumstances of a particular case. For example, a significant impact may exist where the noise of the project plus the background exceeds the nighttime background level by more than 5 dBA at residential communities. Factors staff considers in determining if the noise is significant or not, are:

1. the resulting noise level[2];

2. the character of the noise;

3. the time the noise is produced (day or night);

4. the duration and frequency of occurrence of the noise; and

5. the land use designation of the affected receptor site and the type of receptor (residential, commercial, etc.).

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.

For purposes of evaluating impacts on residential uses, the project noise is compared with measured nighttime ambient noise levels, when residents are asleep. Staff uses the above methods and thresholds to evaluate the project's noise impacts on the project area's populations, including its environmental justice population.

DIRECT IMPACTS AND MITIGATION

Noise impacts associated with the project can be created by construction and demolition activities and normal operation of the project.

Ambient Noise Monitoring

In order to establish a baseline for the comparison of predicted project noise with existing ambient noise, the applicant conducted a long-term ambient noise survey on December 15-18, 2014 and provided the results in the AFC (PPP 2015a, § 4.7, Appendix H). This survey was performed using appropriately calibrated sound-recording equipment and industry-accepted standards and techniques. The noise survey monitored existing noise levels at the locations identified in **Noise Table 2** below. This table also includes a summary of the measurement results.

[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. In this case, if the project creates an increase in ambient noise no greater than 10 dBA, the project noise level may not be significant if the resulting noise level does not exceed 40 dBA.

[3] Noise that draws project-related complaints. For definition of "project-related complaints", see the footnote in Condition of Certification **NOISE-2**.

Noise Table 2
Sensitive Receptor Summary[4]

Receptor	Description	Distance to P3 (feet)	L_{eq} dBA Daytime	L_{eq} dBA Nighttime	L_{50} dBA Daytime	L_{50} dBA Nighttime	L_{90} dBA Nighttime
LT-1 5540 West 5th Street, Oxnard	Existing Residential Community South of Project Site (Oxnard Shores Mobile Home Park)	3,940	55	46	51	45	45
LT-2 5718 West Gonzales Road in Ventura County	Existing Residence North of Project Site	4,100	61	49	55	42	43
LT-3 Beach Walk Subdivision, Oxnard, Formerly Called North Shore Subdivision	Future Residential Community Southeast of Project Site[5]	2,625	63	54	61	45	47

Construction and Demolition Impacts and Mitigation

Construction and demolition noise is usually a temporary phenomenon. Demolition of MSG Units 1 and 2, which is anticipated to take approximately 15 months, would follow the completion of construction of the P3 power block which would last approximately 18 months; no overlap between demolition and construction is anticipated.

Since construction and demolition noise typically varies with time, it is most appropriately measured by and compared with the equivalent sound level, or L_{eq} metric. Noise levels from construction and demolition activities would be expected to reach L_{eq} levels of no more than 47 dBA at LT-1, 47 dBA at LT-2, and 52 dBA at LT-3 (PPP 2015x, Table 4.7-1a; PPP 2015a, Table 4.7-7).

[4] Existing baselines are averaged from PPP 2015x, Tables 4.7-5a, 4.7-5b, 4.7-6a, 4.7-6b, 4.7-7a, 4.7-7b, 4.7-8a, 4.7-8b, 4.7-9a, 4.7-9b, 4.7-10a, and 4.7-10b. The existing MGS Units 1, 2, and 3 operated part of the time during the period of data collection.

[5] The North Shore at Mandalay Bay is an approved residential development scheduled to commence construction in 2016.

Compliance with LORS

Project construction and demolition would occur during the day. The city of Oxnard noise LORS do not limit the loudness of construction/demolition noise during the day, but the County of Ventura Construction Noise Threshold Criteria and Control Plan does. Thus, for LT-2, which is the only project receptor located within the county limits, staff compares the projected construction/demolition noise level with the county's allowable noise limit for daytime; that is, the greater of 55 dBA hourly L_{eq} or the existing ambient hourly L_{eq} plus 3 dBA. The existing average daytime ambient at LT-2 is 61 dBA L_{eq} (see **Noise Table 2**). Since this is greater than 55 dBA L_{eq}, the allowable noise limit becomes 61 dBA L_{eq} plus 3 dBA, or 64 dBA L_{eq}. The expected construction/demolition noise level at this location would be 47 dBA, lower than this limit and thus in compliance with the county's threshold.

The applicant commits to performing noisy construction and demolition work during the times specified in the City of Oxnard Noise Ordinance § 7-188(D) (PPP 2015a, § 4.7.5.3.2; PPP 2015x, § 2.5); that is, 7 a.m. to 6 p.m. Mondays through Saturdays, with no such activities allowed on Sundays and federal holidays. To ensure that this requirement is met, staff proposes Condition of Certification **NOISE-6**, which restricts these activities to those times.

Therefore, project construction and demolition would comply with the noise LORS.

CEQA Impacts

The construction/demolition level of 47 dBA at LT-1 combined with the exiting average daytime ambient of 55 dBA L_{eq} at this location (from **Noise Table 2**) results in 56 dBA L_{eq}, only 1 dBA over the ambient, which is insignificant. The construction/demolition level of 47 dBA at LT-2 combined with the exiting average daytime ambient of 61 dBA L_{eq} at this location (from **Noise Table 2**) results in no increase over the ambient. Similarly, the construction/demolition level of 52 dBA at LT-3 combined with the average daytime ambient of 63 dBA L_{eq} at this location (from **Noise Table 2**) results in no increase over the ambient.

In addition to restricting construction and demolition hours, **NOISE-6** requires the demolition and construction work to be performed in a manner to ensure the potential for noise complaints is reduced as much as practicable. In demolishing MGS Units 1 and 2, the exhaust-air stack and each turbine would be draped with an outdoor construction blanket to limit noise impacts. Other feasible measures may include the use of blasting mats or similar structures to reduce the impacts of falling debris from demolition of the stack and turbines (PPP 2015a, §§ 4.2.2, 4.7.2.1).

Also, 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 and demolition noise.

Therefore, the noise impacts of project construction and demolition would be less than significant.

Linear Facilities

Other than a new 500-foot-long natural gas pipeline, no new linear facilities (electrical transmission lines or water pipelines) are required for the project (PPP 2015a, §§ 2.1, 4.7). 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. Furthermore, construction of linear facilities would be limited to daytime hours in accordance with **NOISE-6**.

Vibration

The only construction work likely to produce vibration that could be perceived off site would be pile driving. The applicant anticipates that pile driving may be required for construction of P3 (PPP 2015a, § 4.7.2.2.1). As explained above in **INTRODUCTION**, Caltrans' measure of the threshold of distinct perception for pile driving begins at a peak particle velocity of about 0.16 in/sec (inches per second). Thus, in order to ensure vibration from construction would not be distinctly perceptible, Condition of Certification **NOISE-7** limits vibration from pile driving to 0.16 in/sec at the project's noise-sensitive receptors.

Pile Driving

Pile driving using traditional techniques could be expected to reach 104 dBA at a distance of 50 feet. The range of pile driving noise at receptors LT-1, LT-2, and LT-3 would be approximately 66-70 dBA. These levels exceed the ambient levels at these receptors by up to 11 dBA (see **Noise Table 2**, 4th column [daytime ambient L_{eq}]). Therefore, pile driving using traditional techniques can potentially cause a significant noise impact at the nearest noise-sensitive receptors. However, several methods are available for reducing noise and vibration generated by traditional pile driving. These methods are: (1) the use of pads or impact cushions of plywood; (2) dampened driving, which involves some form of blanket or enclosure around the hammer; and (3) the use of vibratory drivers. These methods can be effective in reducing the noise by 8-15 dBA as compared to unsilenced impact drivers.

To ensure that pile driving noise would be controlled and this work would be performed in a manner to reduce the potential for any noise complaints, staff proposes Condition of Certification **NOISE-7** below. Also, **NOISE-6** would limit pile driving to daytime hours.

Worker Effects

The applicant has acknowledged the need to protect construction workers from noise hazards and has recognized the applicable LORS that would protect construction and demolition workers (OSHA and Cal-OSHA LORS, see **Noise Table 1**) (PPP 2015a §§ 4.7.1.1.2, 4.7.2.2.1, 4.7.5). To ensure that construction and demolition workers are, in fact, adequately protected in accordance with these LORS, staff proposes Condition of Certification **NOISE-3**.

Operation Impacts and Mitigation

The primary operational noise sources of the P3 project would include the gas turbine air inlet, gas turbine generator, selective catalytic reduction (SCR) module, exhaust-air stack, gas compressor, electric transformer, and some pumps, piping, and valves. Examples of effective mitigation measures that may be considered by the applicant (PPP 2015a, Table 4.7-9; PPP 2015x, § 4.7.2.3) and that are typically implemented for simple-cycle power plants, such as P3, include:

- turbine inlet-air silencing;
- turbine generator enclosure;
- transformer blast walls;
- exhaust-air stack silencing;
- acoustical shrouding of SCR transition duct;
- gas compressor enclosure;
- pump enclosures;
- low-noise valves; and
- lagging of piping.

Staff compares the projected project noise with the applicable LORS, the city of Oxnard LORS for LT-1 and LT-3 (located within the city limits) and Ventura County LORS for LT-2 (located within the unincorporated county limits). In addition, in order to identify any significant adverse impacts, staff evaluates any increase in noise levels at these noise-sensitive receptors due to the project.

Compliance with LORS

The applicant used the Cadna/A® Noise Prediction Model to model the project's operational noise levels based on sound propagation factors adopted under the international standards organization's standard 9613-2 "Acoustics-Sound Attenuation during Propagation Outdoors" (PPP 2015x, § 4.7.2.2.3). Cadna/A® is an acceptable environmental noise prediction model and standard 9613-2 is an acceptable industry standard. The project's loudest operational noise levels at the project's noise-sensitive receptors, as calculated by the model, are tabulated in **Noise Table 3** below (PPP 2015x, Table 4.7-7b). This table shows that the project would comply with the applicable LORS' allowable noise limits.

Noise Table 3
Predicted Operational Noise Levels at Sensitive Receptors and LORS Limits

Receptor	Project Operational Noise Level (dBA)	LORS Limit (dBA) Daytime/ Evening		Project in Compliance with Daytime/ Evening LORS?	LORS Limit (dBA) Nighttime	Project in Compliance with Nighttime LORS?
LT-1	43	55 L_{50} (7 a.m. - 10 p.m.)		Yes	50 L_{50} (10 p.m. - 7 a.m.)	Yes
LT-2	40	64 L_{eq}[6] (7 a.m.-6 p.m.)	50 L_{eq}[7] (6 p.m.-10 pm)	Yes	52 L_{eq}[8] (10 p.m. - 6 a.m.)	Yes
LT-3	46	55 L_{50} (7 a.m. - 10 p.m.)		Yes	50 L_{50} (10 p.m. - 7 a.m.)	Yes

As shown in **Noise Table 3**, operational noise would comply with the noise LORS applicable to each receptor location; that is, the project would be in compliance with the city of Oxnard's allowable limits at LT-1 and LT-3 and with Ventura County's allowable limits at LT-2.

To ensure that the project would not exceed the noise LORS limits, staff proposes Condition of Certification **NOISE-4**. This condition of certification requires an operational noise survey to ensure project compliance. Staff also proposes Conditions of Certification **NOISE-1** and **NOISE-2**, which would establish a public notification and noise complaint process requiring the project owner to resolve any complaints 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 operational noise is steady in nature, as opposed to the intermittent and variable nature of noise from construction. Thus, it tends to define the background noise level. For this reason, staff typically compares power plant operational noise to existing ambient background 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. P3 is expected to operate as an intermediate load and peaking facility, but it may operate at night, which could affect nearby residences if the noise impacts are left unmitigated. For

[6] Exiting ambient of 61 dBA L_{eq} (from **Noise Table 2**) is greater than the county's daytime limit of 55 dBA L_{eq}, so the allowable limit becomes 61 dBA L_{eq} plus 3 dBA, or 64 dBA L_{eq}, consistent with the guidelines of the county's General Plan.

[7] Evening ambient L_{eq} is 48 dBA (PPP 2015x, Table 4.7-5a), so the county's allowable evening limit of 50 dBA L_{eq} applies.

[8] Existing ambient of 49 dBA L_{eq} (from **Noise Table 2**) exceeds the county's nighttime limit of 45 dBA L_{eq}, so the allowable limit becomes ambient plus 3 dBA, or 52 dBA L_{eq}, consistent with the guidelines of the county's General Plan.

residential receptors, staff evaluates project noise emissions by comparing them with nighttime ambient background levels. This evaluation assumes that the potential for public nuisance from power plant noise is greatest at night when residents are asleep. Nighttime ambient noise levels are typically lower than daytime levels; differences in background noise levels of 5 to 10 dBA are common. Staff uses the average of 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.

Noise Table 4, below, compares the project's operational noise levels with the ambient nighttime noise levels.

Staff regards an increase of up to and including 5 dBA as a less-than-significant impact (see **METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE** above). In **Noise Table 4**, for receptor LT-1, combining the project noise level of 43 dBA with the nighttime background noise level of 45 dBA L_{90} yields a combined value of 47 dBA L_{90}, 2 dBA above the ambient, which is a less-than-significant impact.

For LT-2, combining the project level of 40 dBA with the nighttime background level of 43 dBA L_{90} results in 45 dBA L_{90}, 2 dBA above ambient; again, less than significant. For LT-3, combining the project level of 46 dBA with the nighttime background level of 47 dBA L_{90} yields 50 dBA L_{90}, 3 dBA above the ambient; not a significant impact.

Noise Table 4
Predicted Operational Noise Levels at Sensitive Receptors and CEQA Limits

Receptor	Operational Noise Level[9] (dBA)	Measured Lowest Nighttime Ambient L_{90} (dBA)[10]	Combined, Ambient Plus Project (dBA)	Change (dBA)	Less Than Significant Impact?
LT-1	43	45	47	+2	Yes
LT-2	40	43	45	+2	Yes
LT-3	46	47	50	+3	Yes

Staff proposes Condition of Certification **NOISE-4** to ensure that project operation would not cause a significant increase in the existing nighttime ambient noise levels at the noise-sensitive receptors. As explained above, the noise limits given in **NOISE-4** also ensure that the project would not exceed the noise LORS limits.

Tonal Noises

One possible source of nuisance could be strong tonal noises from power plant equipment. Tonal noises are individual sounds (such as pure tones) which, while not

[9] From **Noise Table 3**

[10] From **Noise Table 2**

louder than permissible levels, stand out in sound quality, such as high-pitched sounds. 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 public complaints (PPP 2015a, § 4.7.4). To ensure that tonal noises do not cause public nuisance, 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

Water and natural gas pipelines are usually underground and therefore silent during power plant operation. Noise effects from electrical interconnection lines typically do not extend beyond the lines' right-of-way easements. Other than a new 500-foot-long natural gas pipeline, no new linear facilities are required for the project. The new gas pipeline would be underground and therefore silent during plant operation.

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 P3 would consist of a high-speed gas turbine and electric generator, a natural gas compressor, and various pumps. All of these pieces of equipment are carefully balanced in order to operate properly and permanent vibration sensors are attached to the turbine and generator. Modern power plants using today's gas turbine technologies, such as P3, have not resulted in vibration impacts. Ground-borne vibration from the P3 project would be undetectable by any offsite receptor.

Airborne vibration (low frequency noise) can rattle windows and objects on shelves, and can shake the walls of lightweight structures. The P3's chief source of airborne vibration would be gas turbine exhaust air. In a power plant such as the P3, however, the exhaust must pass through the SCR module and the stack silencer before it reaches the atmosphere. The SCR and stack silencer act as efficient mufflers and significantly reduce airborne vibration. Thus, P3 would not cause airborne vibration effects that would be perceived offsite.

Worker Effects

The applicant acknowledges the need to protect power plant operating and maintenance workers from noise hazards and commits to compliance with all applicable LORS (OSHA and Cal-OSHA LORS, see **Noise Table 1**) (PPP 2015a, §§ 4.7.1.1.2, 4.7.2.2.3, 4.7.4, 4.7.5). 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 operating and maintenance workers are adequately protected in accordance with these LORS, staff proposes Condition of Certification **NOISE-5**.

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 does not need to provide as much detail as the discussion of impacts solely attributable to the project.

Typically, projects within the one-mile radius of a power plant project may present the potential for cumulative noise impacts. Thus, staff's cumulative noise analysis covers the area within this radius. The only project that may have the potential to create a cumulative impact when combined with P3 is the Beach Walk Subdivision (formerly called the North Shore Subdivision) to be located nearly half a mile from P3; this is the future noise-sensitive residential community represented in this analysis by LT-3.

Construction work associated with this project may periodically overlap with construction or demolition work associated with the P3 project. However, P3 would require the following conditions of certification to assure the effective control of construction and demolition noise:

NOISE-1 and **NOISE-2**: Public notification and noise complaint process;

NOISE-6: Restriction on construction/demolition hours and noise control of these activities; and

NOISE-7: Noise control during pile driving activities.

The Environmental Impact Report (EIR) prepared by the city of Oxnard for the Beach Walk Subdivision project lists several appropriate mitigation measures to control its construction noise (North Shore at Mandalay Bay EIR, State Clearinghouse No. 97061004, § 4.8). These measures are similar to those proposed in **NOISE-6** for P3, such as, restricting construction to the daytime hours, locating equipment staging areas away from residential areas, providing sound-reduction features for construction equipment, and installing temporary sound barriers.

Condition of Certification **NOISE-4** would ensure that operational noise levels resulting from P3 comply with applicable local noise requirements and create a less-than-significant impact at the surrounding communities, including this subdivision. According to the city's EIR, a six-foot-tall masonry wall will be constructed around the subdivision, which would reduce the noise impact of P3 on its occupants.

Therefore, the combination of the mitigation measures provided for both projects would ensure that the P3 would not create a significant cumulative noise impact.

FACILITY CLOSURE

All operational noise from the project would cease when the P3 project closes, and no further adverse noise impact from its operation would be possible. The remaining 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 and demolition, it would be similarly treated; that is, noisy work would be performed during daytime hours with similar noise reduction measures as in **NOISE-6** (such as, the use of machinery and

equipment that are properly insulated and the use of noise barriers). Any noise LORS in existence at that time would apply. Unless modified, applicable noise-related conditions of certification included in the Energy Commission decision would also apply.

CONCLUSIONS

If built and operated in conformance with the following conditions of certification, P3 would comply with all applicable noise and vibration LORS and would produce no significant direct or cumulative adverse noise impacts on people within the project area, including the environmental justice population represented in **Socioeconomics Figure 1** and **Table 3**.

Staff recommends conditions of certification addressing worker and employee noise protection (**NOISE-3** and **NOISE-5**), measurement and verification that noise performance criteria are met at the project's noise-sensitive residential receptors (**NOISE-4**), and restrictions on construction and demolition activities (**NOISE-6** and **NOISE-7**). Also, **NOISE-1** and **NOISE-2** establish a public notification and noise complaint process to resolve any noise complaints regarding project construction, demolition, or operation.

Staff retains the responsibility to monitor the enforcement of these conditions of certification. Staff would work under the authority of the CPM to monitor and review the reporting of project performance during construction, demolition, and the full term of operation, including facility closure.

PROPOSED CONDITIONS OF CERTIFICATION

PUBLIC NOTIFICATION PROCESS

NOISE-1 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, demolition, 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 public passersby. This telephone number shall be maintained until the project has been operational for at least one year and all subsequent demolition activities associated with MGS Units 1 and 2 have been completed.

Verification: At least 15 days 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, 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, demolition, and operation of the project, the project owner shall document, investigate, evaluate, and attempt to resolve all project-related noise complaints[11]. The project owner or its authorized agent shall:

- use the Noise Complaint Resolution Form (below), or a functionally equivalent procedure acceptable to the CPM, to document and respond to the 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 with the CPM a Noise Complaint Resolution Form, shown below, that documents the resolution of the complaint. If mitigation is required to resolve the complaint, and the complaint is not resolved within a three business-day period, the project owner shall submit an updated Noise Complaint Resolution Form when the mitigation is implemented.

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 and demolition in accordance with Title 8, California Code of Regulations, Sections 5095-5099, and Title 29, Code of Federal Regulations, Section 1910.95.

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.

[11] A project-related noise complaint is a complaint about noise that is caused by the P3 project as opposed to another source and may constitute a violation by the project of any noise condition of certification, which is documented by an individual or entity affected by such noise.

OPERATIONAL NOISE RESTRICTIONS

NOISE-4 The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that the noise levels due to the project operation alone do not exceed an hourly average exterior noise level of 45 dBA L_{50} measured at or near monitoring location LT-1, an hourly average exterior noise level of 42 dBA L_{eq} measured at or near monitoring location LT-2, and an hourly average exterior noise level of 48 dBA L_{50} measured at or near monitoring location LT-3.

No new pure-tone components (as defined in **Noise Table A1**, last row) shall be caused by the project. No single piece of equipment shall be allowed to stand out as a source of noise that draws project-related complaints.

When the project first achieves a sustained output of 85 percent or greater of its rated capacity, the project owner shall conduct a 25-hour community noise survey at monitoring locations LT-1, LT-2, and LT-3, or at a closer location acceptable to the CPM and include L_{50}, 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 exceeds the above values at the above receptors, 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 reduce the pure tones to a level that complies with **Noise Table A1**, below.

Verification: The above noise survey shall take place within 30 days of the project first achieving a sustained output of 85 percent or greater of its rated capacity.

Within 15 days after completing the survey, 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.

OCCUPATIONAL NOISE SURVEY

NOISE-5 Following the project's attainment of a sustained output of 85 percent or greater of its rated capacity, the project owner shall conduct an occupational noise survey to identify any noise hazardous areas within the power plant.

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 above 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 AND DEMOLITION NOISE RESTRICTIONS

NOISE-6 Heavy equipment operation and noisy[12] work associated with the construction and demolition work relating to any project features, including pile driving and linear facilities, shall be restricted to the times delineated below:

Mondays through Saturdays:	7:00 a.m. to 6:00 p.m.
Sundays and federal holidays:	Construction and demolition not allowed

Demolition and construction work shall be performed in a manner to ensure excessive noise[13] is prohibited and the potential for noise complaints is reduced as much as practicable. 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.

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 and demolition work associated with this project.

Construction and demolition equipment generating excessive noise shall be updated or replaced. Temporary acoustic barriers shall be installed around stationary construction

[12] Noise that draws a project-related complaint. For definition of a "project-related complaint", see the footnote in Condition of Certification **NOISE-2**.

[13] Noise that draws a project-related complaint.

and demolition noise sources if beneficial in reducing the noise. The project owner shall reorient construction and demolition equipment, and relocate construction staging areas, when possible, to minimize the noise impact to nearest noise-sensitive receptors.

PILE DRIVING MANAGEMENT

NOISE-7 The project owner shall perform pile driving in a manner to reduce the potential for any project-related noise complaints. The project owner shall notify the residents in the vicinity of pile driving prior to start of pile driving activities. Vibrations from pile driving shall be limited to a peak particle velocity of 0.16 inches per second at receptors LT-1, LT-2, and LT-3.

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 LT-1, LT-2, and LT-3.

At least 10 days prior to first pile driving, the project owner shall notify the residents within one mile of the pile driving. In this notification, the project owner shall state that it will perform this activity in a manner to reduce the potential for any project-related noise complaints as much as practicable. The project owner shall submit a copy of this notification to the CPM prior to the start of pile driving.

NOISE COMPLAINT RESOLUTION FORM

Puente Power Project (P3)
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 Oxnard 2006 – City of Oxnard General Plan Draft Background Report available online at http://developmentservices.cityofoxnard.org/7/76/961/.

County of Ventura 2010 – Construction Noise Threshold Criteria and Control Plan. Available online at http://www.ventura.org/rma/planning/pdf/ceqa/Construction_Noise_Thresholds.pdf.

County of Ventura 2013 – General Plan, Hazards Appendix, Chapter 2.16 Noise.

Oxnard City Code – Noise Ordinance, Article XI, Sound Regulation.

PPP 2015a – NRG Energy Center Oxnard LLC/John Chillemi (TN 204219-1 – 204220-14). Application for Certification, dated April 13, 2015. Submitted to Robert Oglesby/CEC/Docket Unit on April 16, 2015.

PPP 2015x – Latham & Watkins LLP Project Enhancement and Refinement, Demolition of Mandalay Generating Station Units 1 and 2 (TN 206698). Submitted on November 19, 2015. CEC/Docket Unit on November 19, 2015.

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 Environnent	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 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, Academic Press, New York, 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 A4OSHA 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.

PUBLIC HEALTH

Huei-An (Ann) Chu, Ph.D.

SUMMARY OF CONCLUSION

California Energy Commission staff has analyzed the potential human health risks associated with construction, demolition, and operation of the proposed Puente Power Project (P3). Staff's analysis of potential health impacts was based on a highly conservative health-protective methodology that accounts for impacts on the most sensitive individuals in a given population. As part of its analysis, staff considered the environmental justice population, local farm workers, and recreational users. Staff concludes that there would be no significant health impacts from the project's air emissions.

INTRODUCTION

The purpose of this section of the Preliminary Staff Assessment (PSA) is to determine if emissions of toxic air contaminants (TACs) from the proposed P3 would have the potential to cause significant adverse public health impacts or to violate standards for the protection of public health. If potentially significant health impacts are identified, staff would identify and recommend mitigation measures necessary to reduce such impacts to insignificant levels.

In addition to the analysis in this **Public Health** section that focuses on potential effects on the public from emissions of toxic air contaminants, Energy Commission staff addresses the potential impacts of regulated, or criteria, air pollutants in the **Air Quality** section of this PSA and assesses the health impacts on public and workers from accidental releases of hazardous materials in the **Hazardous Materials Management** and **Worker Safety & Fire Protection** sections. The health and nuisance effects from electric and magnetic fields are discussed in the **Transmission Line Safety and Nuisance** section. Pollutants released from the project's wastewater streams are discussed in the **Soil and Water Resources** section. Releases in the form of hazardous and nonhazardous wastes are described in the **Waste Management** section.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Public Health Table 1 lists the federal, state, and local laws, ordinances, regulations, and standards (LORS) applicable to the control of TAC emissions and mitigation of public health impacts for P3. This PSA evaluates compliance with these LORS.

Public Health Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable LORS	Description
Federal	
Clean Air Act section 112 (Title 42, U.S. Code section 7412)	Section 112 of the Clean Air Act addresses emissions of hazardous air pollutants (HAPs). This act requires new sources that emit more than ten tons per year of any specified HAP or more than 25 tons per year of any combination of HAPs to apply Maximum Achievable Control Technology (MACT).
40 Code of Federal Regulations (CFR) Part 63 Subpart YYYY (National Emission Standard for Hazardous Air Pollutants for Stationary Combustion Turbines)	This regulation applies to gas turbines located at major sources of HAP emissions. A major source is defined as a facility with emissions of ten tons per year (tpy) or more of a single HAP or 25 tpy or more of a combination of HAPs based on the potential to emit.
40 Code of Federal Regulations (CFR) Part 68 (Risk Management Plan)	This regulation requires facilities storing or handling significant amounts of acutely hazardous materials to prepare and submit Risk Management Plans.
State	
California Health and Safety Code section 25249.5 et seq. (Proposition 65)	These sections establish thresholds of exposure to carcinogenic substances above which Proposition 65 exposure warnings are required.
California Health and Safety Code, Article 2, Chapter 6.95, Sections 25531 to 25541; California Code of Regulations Title 19 (Public Safety), Division 2 (Office of Emergency Services), Chapter 4.5 (California Accidental Release Prevention Program)	These sections require facilities storing or handling significant amounts of acutely hazardous materials to prepare and submit Risk Management Plans.
California Health and Safety Code section 41700	This section states that “no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property.”
California Health and Safety Code sections 44300 et seq.	Air Toxics Hot Spots Program requires participation in the inventory and reporting program at the local air pollution control district level.
California Health and Safety Code sections 44360 to 44366 (Air Toxics “Hot Spots” Information and Assessment Act—AB 2588)	These sections require that, based on results of a health risk assessment (HRA) conducted per ARB (California Air Resources Board) / OEHHA (Office of Environmental Health Hazard Assessment) guidelines, toxic contaminants do not exceed acceptable levels.
California Public Resource Code section 25523(a); Title 20, California Code of Regulations, sections 1752.5, 2300–2309 and Division 2 Chapter 5, Article 1, Appendix B, Part (1); California Clean Air Act, Health and Safety Code section 39650, et seq.	These sections require a quantitative health risk assessment for new or modified sources, including power plants that emit one or more toxic air contaminants (TACs).
Local	
VCAPCD Rule 73 (National Emission Standards for Hazardous Air Pollutants)	This rule requires units to comply with federal National Emission Standards for Hazardous Air Pollutant (NESHAP) standards.

SETTING

Characteristics of the natural environment, such as meteorology and terrain, affect the project's potential for impacts on public health. An emission plume from a facility would affect elevated areas before lower terrain areas because of reduced opportunity for atmospheric mixing. Consequently, areas of elevated terrain can often be subjected to increased pollutant impacts compared to lower-level areas. Also, the land use around a project site can influence impacts due to population distribution and density, which, in turn, can affect public exposure to project emissions. Additional factors affecting potential public health impacts include existing air quality and environmental site contamination.

SITE AND VICINITY DESCRIPTION

The proposed P3 site is located at 393 North Harbor Boulevard in the city of Oxnard. It is within the Ventura County Air Pollution Control District (VCAPCD). Oxnard is a seaside city in Ventura County in Southern California. The project site is located at the site of the existing Mandalay Generating Station (MGS), an operating power plant (PPP 2015a, Section 2.0 and 4.9).

P3 would replace two aging gas-fired steam boiler generating units (Units 1 and 2) at the existing MGS[1] with a new General Electric (GE) Frame 7HA.01 natural gas–fired simple-cycle combustion turbine generator (CTG) and associated auxiliaries. In addition, the existing diesel emergency generator engine would be replaced with a new emergency engine, and the existing diesel emergency fire pump engine would be shut down. With the exception of certain infrastructure that would be re-purposed for P3 use, the remainder of the facility would remain unchanged, including the continued operation of one natural-gas–fired peaker combustion turbine (MGS Unit 3), and associated ancillary facilities (PPP 2015a, Section 4.9.1).

MGS Unit 2 would be permanently shut down at the end of the commissioning period for the proposed gas turbine engine. MGS Unit 1 would operate after the new CTG is operational, but would be permanently shut down prior to December 31, 2020. Even though MGS Unit 1 would eventually be shut down (no later than December 31, 2020), project owner and staff's health risk assessments (HRA) conservatively assume that MGS Unit 1 would remain operational beyond 2020 (PPP 2016s).

P3 would be developed on approximately 3 acres of previously disturbed vacant land within the existing boundaries of MGS. The P3 site is bordered by sand dunes and the Pacific Ocean to the west; McGrath Lake State Park and land owned by SunCal to the north; industrial uses to the north, south, and east; and agricultural uses farther to the east (PPP 2015a, Section 4.9.1).

According to the Application for Certification (AFC), approximately 271,186 residents live within a six-mile radius of P3, and sensitive receptors within a six-mile radius of the project site include (PPP 2015a, Section 4.9.1 and Appendix J):

[1] MGS consists of two conventional boiler/steam turbine units (Units 1 and 2) and one gas turbine peaking unit (Unit 3).

- 628 daycare centers
- 6 nursing homes
- 90 schools
- 1 hospital
- 6 colleges
- 1 arena

Sensitive receptors, such as infants, the aged, and people with specific illnesses or diseases, are the subpopulations which are more sensitive to the effects of toxic substance exposure. The nearest sensitive receptor to the P3 site is the Leite Family Daycare on Reef Way, approximately 1 mile (5,500 feet) to the southeast. Agricultural workers in fields near the project are not considered sensitive receptors, but they are considered and analyzed as off-site workers. The closest existing residential neighborhood is the Oxnard Shores Mobile Home Park, approximately 0.75 mile (or approximately 3,900 feet) to the south. The North Shore at Mandalay Bay residential development (recently re-named Beach Walk on the Mandalay Coast) is scheduled to commence vertical construction in 2016. The closest distance from the proposed P3 stack to this development boundary is approximately 0.47 mile to the southeast (approximately 2,460 feet) (PPP 2015a, Section 4.9.1).

METEOROLOGY AND CLIMATE

Meteorological conditions, including wind speed, wind direction, and atmospheric stability, affect the extent to which pollutants are dispersed into the air and the direction of pollutant transport. This, in turn, affects the level of public exposure to emitted pollutants along with associated health risks. When wind speeds are low and the atmosphere is stable, for example, dispersion is reduced and localized exposures may be increased.

Atmospheric stability is one characteristic related to turbulence, or the ability of the atmosphere to disperse pollutants from convective air movement. Mixing heights (the height marking the region within which the air is well mixed below the height) are lower during mornings because of temperature inversions. These heights increase during warm afternoons. Staff's **Air Quality** section presents a more detailed description of meteorological data for the area.

The Mediterranean climate of Ventura County has a large-scale wind and temperature regime controlled by the proximity to the Pacific Ocean and seasonal migration of the Pacific high-pressure system. As a result, summers are relatively cool and winters are warm in comparison to other locations. Temperatures below freezing occur infrequently, as do temperatures over 100 degrees Fahrenheit (°F) (PPP 2015a, Section 4.1.1.2).

The annual and quarterly wind rose plots[2] (from 2009 to 2013) for the Oxnard Airport monitoring station, which is approximately 2 miles to the east of P3, show that the

[2] A wind rose plot is a diagram that depicts the distribution of wind direction and speed at a location over a period of time.

prevailing winds that blow to the proposed P3 were mostly from the west during February through October, and from the northeast during November through January (PPP 2015a, Section 4.1.1.2and Appendix C-1). Please refer to the **Air Quality** section of this PSA for more details.

EXISTING PUBLIC HEALTH CONCERNS

As previously noted, the proposed P3 site is located in Ventura County, within the Ventura County Air Pollution Control District (VCAPCD). By examining average toxic concentration levels from representative air monitoring sites, together with cancer risk factors specific to each carcinogenic contaminant, a lifetime cancer risk can be calculated to provide a background risk level for inhalation of ambient air. This analysis is prepared to identify the current status of respiratory diseases (including asthma), cancer, and childhood mortality rates in the population located within the same county or air basin of the proposed project site. Such assessment of existing health concerns provides staff with a basis to evaluate the significance of any additional health impacts from P3 and assess the need for further mitigation.

Cancer

When examining such risk estimates, staff considers it important to note that the overall lifetime risk of developing cancer for the average male in the United States is about 1 in 2, or 500,000 in 1 million and about 1 in 3, or 333,333 in 1 million for the average female (American Cancer Society 2014).

From 2007 to 2011, the cancer incidence rates in California were 49.92 in 1 million for males and 39.63 for females. Also, from 2007 to 2011, the cancer death rates for California were 18.68 in 1 million for males and 13.73 in 1 million for females (American Cancer Society, Cancer Facts & Figures 2015).

By examining the State Cancer Profiles presented by the National Cancer Institute, staff found that the trend of cancer death rates in Ventura County had been falling between 2008 and 2012. These rates (of 14.72 in 1 million, combined male/female) were somewhat lower than the statewide average of 15.51 in 1 million (National Cancer Institute 2016a).

According to the County Health Status Profiles 2015, the death rate due to all cancers, from 2011 to 2013, is 14.68 in 1 million for Ventura County, slightly lower than the cancer death rate (15.09 in 1 million) for California (CDPH 2015).

Lung Cancer

As for lung and bronchus cancers, from 2007 to 2011 the cancer incidence rates in California were 5.8 in 1 million for males and 4.31 in 1 million for females. Also, from 2007 to 2011 the cancer death rates for California were 4.55 in 1 million for males and 3.15 in 1 million for females (American Cancer Society, Cancer Facts & Figures 2015). The statistics from State Cancer Profiles are similar: Lung and Bronchus Cancer incidence rates in Ventura county during 2007-2011 were 4.47 in 1 million, which is slightly lower than the incidence rate of the entire state (4.95 in 1 million) (National Cancer Institute 2016b).

According to the County Health Status Profiles 2015, the death rate due to lung cancers, from 2011 to 2013, is 2.85 in 1 million for Ventura County, slightly lower than the death rate (3.36 in 1 million) for California (CDPH 2015).

Asthma

The asthma diagnosis rates in Ventura County are lower than the average rates in California for both adults (age 18 and over) and children (ages 1-17). The percentage of adults diagnosed with asthma was reported as 6.5 percent in 2005-2007, compared to 7.7 percent for the general California population. Rates for children for the same 2005-2007 period were reported as 7.5 percent in Ventura County compared to 10.1 percent for the state in general (Wolstein et al., 2010).

The Ventura County Health Care Agency Public Health division also provides information on its website regarding community health and demographic information for community members (Ventura County 2015a). Asthma diagnosis rates in Ventura County for adults are below the state average, but slightly higher than average for children in Ventura County. The percentage of adults who have been diagnosed with asthma was 10.9 percent in 2011-2012, compared with 14 to 17.7 percent of the population statewide (Ventura County 2015b). The rate for children was 16.5 percent, compared with 15.4 percent statewide for the same time period (Ventura County 2015c).

Valley Fever

An additional respiratory illness for the area is Valley Fever (Coccidioidomycosis). Valley Fever is an infection that occurs when the spores of the fungus *Coccidioides immitis* enter a human's lung through inhalation. When people breathe in these *Coccidioides* spores, they are at risk of developing Valley Fever.

Valley Fever is currently found in six southwestern states, including California. In California, the highest Valley Fever rates have been recorded in Merced, Madera, Fresno, Tulare, Kern, Monterey, Kings, and San Luis Obispo counties (CDC 2014). According to the CDC, parts of Ventura County are suspected endemic areas for Coccidioidomycosis (CDC 2015). In Ventura County, Valley Fever tends to be more prevalent in the hotter and dryer Simi Valley area, with higher incidences occurring in 2004 that may be attributed to wildfires in the area and the ensuing landslides. In a recent study of 15 counties impacted by Valley Fever between 2007 and 2011, Ventura County had 300 total reported cases, with 65 of those occurring in Oxnard. Ventura County ranked ninth in the total number or cases reported and in the mean incidence rate for the five year study period. There was no observed tendency of the number of cases to increase over time (MacLean 2014).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

This section discusses toxic air contaminant (TAC) emissions to which the public could be exposed during project construction/demolition and routine operation. Following the

release of TACs into the air, water or soil, people would come into contact with them through inhalation, dermal contact, or ingestion via contaminated food, water or soil.

Air pollutants for which no ambient air quality standards have been established are called non-criteria pollutants. Unlike criteria pollutants such as ozone, carbon monoxide, sulfur dioxide, or nitrogen dioxide, non-criteria pollutants have no ambient (outdoor) air quality standards that specify health-based levels considered safe for everyone[3]. Since non-criteria pollutants do not have such standards, a health risk assessment (HRA) is used to determine if people might be exposed to those types of pollutants at unhealthy levels.

The standard approach currently used for a HRA involves four steps: 1) hazard identification, 2) exposure assessment, 3) dose-response assessment and 4) risk characterization (OEHHA, 2003). These four steps are briefly discussed below:

1. **Hazard identification** is conducted to determine the potential health effects that could be associated with project emissions. For air toxics sources, the main purpose is to identify whether or not a hazard exists. Once a hazard has been identified, staff evaluates the exact toxic air contaminant(s) of concern and determines whether a TAC is a potential human carcinogen or is associated with other types of adverse health effects.

2. An **exposure assessment** is conducted to estimate the extent of public exposure to project emissions, including: (1) the worst-case concentrations of project emissions in the environment using dispersion modeling; and (2) the amount of pollutants that people could be exposed to through inhalation, ingestion, and dermal contact. Therefore, this step involves emissions quantification, modeling of environmental transport and dispersion, evaluation of environmental fate, identification of exposure routes, identification of exposed populations and sensitive subpopulations, and estimation of short-term and long-term exposure levels.

3. A **dose-response assessment** is conducted to characterize the relationship between exposure to an agent and incidence of an adverse health effect in exposed populations. The assumptions and methodologies of dose-response assessment are different between cancer and noncancer health effects. In cancer risk assessment, the dose-response relationship is expressed in terms of a potency (or slope) factor that is used to calculate the probability of getting cancer associated with an estimated exposure. In cancer risk assessment, it is assumed that risk is directly proportional to dose. It is also assumed that there is no threshold for carcinogenesis. In non-cancer risk assessment, dose-response data developed from animal or human studies are used to develop acute and chronic non-cancer Reference Exposure Levels (RELs). The acute and chronic RELs are defined as the concentration at which no adverse non-cancer health effects are anticipated. Unlike cancer health effects, non-cancer acute and chronic health effects are generally assumed to have thresholds for adverse effects. In other words, acute or chronic injury from a TAC would not occur

[3] Carbon dioxide (CO_2) is also a non-criteria pollutant, but it is also not considered a TAC at normal concentrations and is not evaluated in this analysis.

until exposure to the pollutant has reached or exceeded a certain concentration (i.e., threshold).

4. **Risk characterization** is conducted to integrate the health effects and public exposure information and to provide quantitative estimates of health risks resulting from project emissions. Staff characterizes potential health risks by comparing worst-case exposure to safe standards based on known health effects.

Staff conducts its public health analysis by evaluating the information and data provided in the AFC by the applicant. Staff also relies upon the expertise and guidelines of the California Environmental Protection Agency (Cal/EPA) Office of Environmental Health Hazard Assessment (OEHHA) in order to: (1) identify contaminants that cause cancer or other noncancer health effects, and (2) identify the toxicity, cancer potency factors and non-cancer RELs of these contaminants. Staff relies upon the expertise of the California Air Resources Board (ARB) and local air districts to conduct ambient air monitoring of TACs and on the California Department of Public Health to evaluate pollutant impacts in specific communities. It is not within the purview or the expertise of the Energy Commission staff to duplicate the expertise and statutory responsibility of these agencies.

For each project, a screening-level risk assessment is initially performed using simplified assumptions that are intentionally biased toward protection of public health. That is, staff uses an analysis designed to overestimate public health impacts from exposure to project emissions. It is likely that the actual risks from the source in question would be much lower than the risks as estimated by the screening-level assessment. The risks for such screening purposes are based on examining conditions that would lead to the highest, or worst-case, risks and then using those assumptions in the assessment. Such an approach usually involves the following:

- using the highest levels of pollutants that could be emitted from the plant;
- assuming weather conditions that would lead to the maximum ambient concentration of pollutants;
- using the type of air quality computer model which predicts the greatest plausible impacts;
- calculating health risks at the location where the pollutant concentrations are estimated to be the highest;
- assuming that an individual's exposure to carcinogenic (cancer-causing) agents would occur continuously for 70[4] years; and

[4] In 2015 Guidance, OEHHA recommends that an exposure duration (residency time) of 30 years be used to estimate individual cancer risk for the maximally exposed individual resident (MEIR). However, the applicant still used 70 years as the exposure duration, which tends to overestimate project impacts of MEIR. In addition, for the maximally exposed individual worker (MEIW), OEHHA now recommends using an exposure duration of 25 years to estimate individual cancer risk for off-site workers (OEHHA 2015, Table 8.5). The applicant used 40 years as the exposure duration, which tends to overestimate project impacts of MEIW.

- using health-based objectives aimed to protect the most sensitive members of the population (i.e., the young, elderly, and those with respiratory illnesses).

A screening-level risk assessment would, at a minimum, include the potential health effects from inhaling hazardous substances. Some facilities would also emit certain substances (e.g. semi-volatile organic chemicals and heavy metals) that could present a health hazard from non-inhalation pathways of exposure (OEHHA 2003, Tables 5.1, 6.3, 7.1). When these multi-pathway substances are present in facility emissions, the screening-level analysis would include the following additional exposure pathways: soil ingestion, dermal exposure, consumption of locally grown plant foods, mother's milk and water ingestion[5] (OEHHA 2003, p. 5-3).

The HRA process addresses three categories of health impacts: (1) acute (short-term) health effects, (2) chronic (long-term) noncancer effects, and (3) cancer risk (also long-term). They are discussed below.

Acute Noncancer Health Effects

Acute health effects are those that result from short-term (one-hour) exposure to relatively high concentrations of pollutants. Such effects are temporary in nature and include symptoms such as irritation of the eyes, skin, and respiratory tract.

Chronic Noncancer Health Effects

Chronic noncancer health effects are those that result from long-term exposure to lower concentrations of pollutants. Long-term exposure is defined as more than 12 percent of a lifetime, or about eight years (OEHHA 2003, p. 6-5). Chronic noncancer health effects include heart and respiratory system diseases that reduced breathing efficiency such as asthma.

Reference Exposure Levels (RELs)

The analysis for both acute and chronic noncancer health effects compares the maximum project contaminant levels to safe levels known as Reference Exposure Levels, or RELs. These are amounts of toxic substances to which even sensitive individuals could be exposed without suffering any adverse health effects (OEHHA 2003, p. 6-2). These exposure levels are specifically designed to protect the most sensitive individuals in the population, such as infants, the aged, and people with specific illnesses or diseases which make them more sensitive to the effects of toxic substance exposure. The RELs are based on the most sensitive adverse health effect reported in the medical and toxicological literature and include specific margins of safety. The margins of safety account for uncertainties associated with inconclusive scientific and technical information available at the time of setting the RELs. They are therefore meant to provide a reasonable degree of protection against hazards that research has not yet identified.

[5] The HRA exposure pathways for P3 included inhalation, home grown produce, dermal absorption, soil ingestion, fish ingestion and mother's milk, not including water ingestion because water sources is not impacted by P3.

Concurrent exposure to multiple toxic substances would result in health effects that are equal to, less than, or greater than effects resulting from exposure to the individual chemicals. Only a small fraction of the thousands of potential combinations of chemicals have been tested for the health effects of combined exposures. In conformity with California Air Pollution Control Officers Association (CAPCOA) guidelines, the HRA assumes that the effects of each substance are additive for a given organ system (OEHHA 2003, pp. 1-5, 8-12). Other possible mechanisms due to multiple exposures include those cases where the actions would be synergistic or antagonistic (where the effects are greater or less than the sum, respectively). For these types of exposures, the health risk assessment could underestimate or overestimate the risks.

Cancer Risks

For carcinogenic substances, the health assessment considers the risk of developing cancer and assumes that continuous exposure to the carcinogen would occur over a 70-year lifetime[6]. The risk that is calculated is not meant to project the actual expected incidence of cancer, but rather a theoretical upper-bound estimate based on the worst-case assumptions.

Cancer Potency Factors

Cancer risk is expressed in terms of chances per million of developing cancer. It is a function of the maximum expected pollutant concentration, the probability that a particular pollutant would cause cancer (called potency factors), and the length of the exposure period. Cancer risks for individual carcinogens are added together to yield a total cancer risk for each potential source. The conservative nature of the screening assumptions used means that the actual cancer risks from project emissions would be considerably lower than estimated.

As previously noted, the screening analysis is performed to assess the worst-case risks to public health associated with the proposed project. If the screening analysis were to predict a risk below significance levels, no further analysis would be necessary and the source would be considered acceptable with regard to carcinogenic effects. If, however, the risk were to be above the significance level, then further analysis using more realistic site-specific assumptions would be performed to obtain a more accurate estimate.

SIGNIFICANCE CRITERIA

Energy Commission staff assesses the maximum cancer impacts from specific carcinogenic exposures by first estimating the potential impacts on the maximally exposed individual. This is a person hypothetically exposed to project emissions at a location where the highest ambient impacts were calculated using the worst-case assumptions. Since the individual's exposure would produce the maximum impacts possible around the source, staff uses this risk estimate as a marker for acceptability of the project's carcinogenic impacts.

[6] See footnote 4.

Acute and Chronic Noncancer Health Risks

As described earlier, non-criteria pollutants are evaluated for short-term (acute) and long-term (chronic) noncancer health effects, and the noted cancer impacts from long-term exposures. The significance of project-related impacts is determined separately for each of the three health effects categories. Staff assesses the noncancer health effects by calculating a hazard index. A hazard index is a ratio obtained by comparing exposure from facility emissions to the safe exposure level (i.e. REL) for that pollutant. A ratio of less than 1.0 suggests that the worst-case exposure would be below the limit for safe levels and would thus be insignificant with regard to health effects.

The hazard indices for all toxic substances with the same type of health effect are added together to yield a Total Hazard Index for the source. The Total Hazard Index is calculated separately for acute effects and chronic effects. A Total Hazard Index of less than 1.0 would indicate that cumulative worst-case exposures would not lead to significant noncancer health effects. In such cases, asthma and other noncancer health impacts would be considered unlikely even for sensitive members of the population. Staff would therefore conclude that there would be no significant asthma and other noncancer project-related public health impacts. This assessment approach is consistent with risk management guidelines of both California OEHHA and U.S. EPA.

Cancer Risk

Staff relies upon regulations implementing the provisions of Proposition 65, the Safe Drinking Water and Toxic Enforcement Act of 1986, (Health & Safety Code, §§25249.5 et seq.) for guidance in establishing significance levels for carcinogenic exposures. Title 22, California Code of Regulations, section 12703(b) states that "the risk level which represents no significant risk shall be one which is calculated to result in one or less excess cancer cases within an exposed population of 100,000, assuming lifetime exposure." This risk level is equivalent to a cancer risk of 10 in 1 million, which is also written as 10×10^{-6}. In other words, under state regulations, an incremental cancer risk greater than 10 in 1 million from a project should be regarded as suggesting a potentially significant carcinogenic impact on public health. The 10 in 1 million risk level is also used by the Air Toxics "Hot Spots" (AB 2588) program as the public notification threshold for air toxic emissions from existing sources.

An important distinction between staff's and the Proposition 65 risk characterization approach is that the Proposition 65 significance level applies separately to each cancer-causing substance, whereas staff determines significance based on the total risk from all the cancer-causing pollutants to which the individual might be exposed in the given case. Thus, the manner in which the significance level is applied by staff is more conservative (health-protective) than the manner applied by Proposition 65. The significant risk level of 10 in 1 million is also consistent with the level of significance adopted by many California air districts. In general, these air districts would not approve a project with a cancer risk estimate of more than 10 in 1 million.

As noted earlier, the initial risk analysis for a project is typically performed at a screening level, which is designed to overstate actual risks, so that health protection could be ensured. Staff's analysis also addresses potential impacts on all segments of the

population, including the young, the elderly, and individuals with existing medical conditions that would render them more sensitive to the adverse effects of toxic air contaminants and any minority or low-income populations that are likely to be disproportionately affected by impacts. To accomplish this goal, staff uses the most current acceptable public health exposure levels (both acute and chronic) set to protect the public from the effects of air toxics being analyzed. When a screening analysis shows the cancer risks to be above the significance level, refined assumptions would be applied for likely a lower, more realistic, risk estimate. If, after refined assumptions, the project's risk is still found to exceed the significance level of 10 in 1 million, staff would recommend appropriate measures to reduce the risk to less than significant levels. If, after all feasible risk reduction measures have been considered and a refined analysis still identifies a cancer risk of greater than 10 in 1 million, staff would deem such a risk to be significant and would not recommend project approval.

DIRECT/INDIRECT IMPACTS AND MITIGATION

PROPOSED PROJECT'S CONSTRUCTION/DEMOLITION IMPACTS AND MITIGATION MEASURES

The construction for P3 would take total approximately 21 months, including site mobilization, grading, construction, and start-up/commissioning. Onsite construction is expected to commence in October 2018. Construction and startup of P3 would be completed by June 2020 (PPP 2015a, Section 2.9). Construction of the proposed project is scheduled to occur over an 18-month period, followed by 3 months of Units 1 and 2 decommissioning activities (PPP 2015a, Section 4.1.3.5).

In November 2015, the applicant proposed a project enhancement and refinement relative to the previously submitted AFC, to include the demolition of the two gas-fired steam boiler generating units (Units 1 and 2) at the existing Mandalay Generating Station (MGS). MGS consists of two conventional steam turbine units (Units 1 and 2) and one gas turbine peaking unit (Unit 3). The original AFC assumed that if P3 is approved and developed, MGS Units 1 and 2 would be retired by the completion of commissioning of P3 (in June 2020), and that the units would then be decommissioned and left in place. In the project enhancement and refinement document, the applicant proposed to demolish MGS Units 1 and 2 following their retirement and decommissioning. The specific sequencing events of commissioning, retirement, decommissioning, and demolition activities would be retirement of MGS Unit 2 prior to completion of commissioning of P3, retirement of MGS Unit 1 by the applicable once-through cooling (OTC) compliance deadline of December 31, 2020, and decommissioning and demolition of MGS Units 1 and 2 thereafter. Unit 3 will continue to operate and would not be affected by P3 or the demolition of MGS Units 1 and 2 (PPP 2015y, Section 1.1).

Decommissioning of Units 1 and 2 would commence upon retirement of both units (no later than December 31, 2020), and is anticipated to take approximately 6 months. Asbestos abatement and above-grade demolition work for MGS Units 1 and 2 is anticipated to take approximately 15 months following completion of decommissioning. Milestones are as follows (PPP 2015y, Section 1.4):

- P3 commercial online date: June 2020;
- Shut down of MGS Unit 2: June 2020 or P3 Commercial online date;
- Shut down of MGS Unit 1: no later than December 31, 2020;
- Complete decommissioning of MGS Units 1 and 2: June 2021;
- Complete asbestos abatement: late 2021;
- Complete demolition: late 2022.

The potential construction/demolition risks are normally associated with exposure to asbestos, fugitive dust, and combustion emissions (i.e. diesel exhaust).

Asbestos

The demolition of buildings containing asbestos could cause the emission of asbestos. Asbestos is a mineral fiber that occurs in rock and soil. Because of its fiber strength and heat resistance, it has been used in a variety of building construction materials for insulation and as a fire-retardant. Asbestos has been used in a wide range of manufactured goods, mostly in building materials (roofing shingles, ceiling and floor tiles, paper products, and asbestos cement products), friction products (automobile clutch, brake, and transmission parts), heat-resistant fabrics, packaging, gaskets, and coatings (US EPA, 2012). Structures built before 1980 are more likely to have asbestos containing materials (ACM). Thermal system insulation (formed or spray-on) is the ACM of greatest concern for response and recovery worker exposure (Occupational Safety and Health Administration [OSHA]). Exposure to ACM increases workers' and residences' risk of developing lung diseases, including asbestosis, lung cancer, and mesothelioma.

ACM are prevalent throughout the MGS plant equipment and structures. The applicant would verify the past surveys and conduct a new survey, if necessary, to identify the presence of ACM. Asbestos removal would take place in compliance with all federal, state, and local requirements, including those for personnel protection (PPP 2015y Section 2.1). Prior to the demolition of the structures, the applicant would develop the implementation plans for the identification, testing, removal, monitoring, and disposal of any hazardous fluids and building materials, including asbestos and lead-based paint, as necessary. The applicant also has to get the asbestos/lead-based paint abatement permit and notification from Ventura County Air Pollution Control District (VCAPCD) (PPP 2015y, Section 2.2).

The mitigation measures needed to reduce the impacts of asbestos, ACM and other hazardous wastes from the construction or demolition phases of the project are covered in the **Waste Management** section. As for asbestos, Conditions of Certification **WASTE-5** requires that the project owner submit the VCAPCD Demolition or Renovation Plan for review prior to removal and disposal of asbestos. This program ensures there would be no release of asbestos that could impact public health and safety. Please refer to staff's **Waste Management** section for detailed mitigation measures regarding the construction/demolition of asbestos and ACM, and information on the safe handling and disposal of these and all project-related wastes.

Fugitive Dust

Fugitive dust is defined as dust particles that are introduced into the air through certain activities such as soil cultivation, vehicles operating on open fields, or dirt roadways. Fugitive dust emissions during construction and demolition of the proposed project could occur from:

- dust entrained during site preparation and grading/excavation at the construction site;
- dust entrained during onsite movement of construction vehicles on unpaved surfaces;
- fugitive dust emitted from an onsite concrete batch plant; and
- wind erosion of areas disturbed during construction activities.

The effects of fugitive dust on public health are covered in the **Air Quality** section of this PSA which includes staff's recommended mitigation measures, including **AQ-SC3** (Construction Fugitive Dust Control) and **AQ-SC4** (Dust Plume Response Requirement) to prevent fugitive dust plumes from leaving the project boundary. As long as the dust plumes are kept from leaving the project site, there would be no significant concern of fugitive dust adversely affecting public health.

Diesel Exhaust

Emissions of combustion byproducts during construction would result from:

- exhaust from diesel construction equipment used for site preparation, grading, excavation, trenching, and construction of onsite structures;
- exhaust from water trucks used to control construction dust emissions;
- exhaust from portable welding machines, small generators, and compressors;
- exhaust from diesel trucks used to transport workers and deliver concrete, fuel, and construction supplies to construction areas; and
- exhaust from vehicles used by construction workers to commute to and from the project areas.

Construction/Demolition Health Risk Assessment (HRA) for Diesel Exhaust

The primary air toxic pollutant of concern from construction/demolition activities is diesel particulate matter (diesel PM or DPM). Diesel exhaust is a complex mixture of thousands of gases and fine particles and contains over 40 substances listed by the U.S. Environmental Protection Agency (EPA) as hazardous air pollutants (HAPs) and by ARB as toxic air contaminants. The diesel particulate matter (DPM) is primarily composed of aggregates of spherical carbon particles coated with organic and inorganic substances. Diesel exhaust deserves particular attention mainly because of its ability to induce serious noncancer effects and its status as a likely human carcinogen.

Diesel exhaust is also characterized by ARB as "particulate matter from diesel-fueled engines." The impacts from human exposure would include both short- and long-term health effects. Short-term effects can include increased coughing, labored breathing,

chest tightness, wheezing, and eye and nasal irritation. Effects from long-term exposure can include increased coughing, chronic bronchitis, reductions in lung function, and inflammation of the lung. Epidemiological studies strongly suggest a causal relationship between occupational diesel exhaust exposure and lung cancer. Diesel exhaust is listed by the EPA as "likely to be carcinogenic to humans" (U.S. EPA 2003).

Based on a number of health effects studies, the Scientific Review Panel (SRP) on Toxic Air Contaminants in 1998 recommended a chronic REL for diesel exhaust particulate matter of five micrograms per cubic meter of air ($\mu g/m^3$) and a cancer unit risk factor of $3x10^{-4}$ $(\mu g/m^3)^{-1}$. However, SRP did not recommend a specific value for an acute REL since available data in support of a value was deemed insufficient. Therefore, there is no acute relative exposure level (REL) for diesel particulate matter, and it was not possible to conduct an assessment for its acute health effects. In 1998, ARB listed particulate emissions from diesel-fueled engines as a toxic air contaminant and approved the panel's recommendations regarding health effects (OEHHA 2009, Appendix A). In 2000, ARB developed a "Risk Reduction Plan to Reduce Particulate Matter Emissions From Diesel-Fueled Engines and Vehicles" and has been developing regulations to reduce diesel particulate matter emissions since that time.

A screening HRA for diesel particulate matter was conducted to assess the potential impacts associated with diesel emissions during the construction and demolition activities at P3. This HRA was based on the annual average emissions of diesel particulate matter (DPM), assumed to occur each year for 1.5 years of continuous exposure for construction and 1.3 years of continuous exposure for demolition[7]. The results are listed in the upper portion of **Public Health Table 2**.

Construction of P3

The HRA results for the short-term construction activities show a maximum off-property residential cancer risk (MEIR) of 2.7 in 1 million. This impact is below the significance threshold of 10 in 1 million. This low risk level would also apply to any exposure of field workers on the adjacent farmlands, transit workers, and those using the area for recreation. Even though the calculated point of maximum impact or PMI (i.e. 15.3) is higher than the threshold, it is located within the property boundaries of the project where there are no residences, farm workers or members of the public. Staff also checked all other receptors within the computer model output domain with risk numbers higher than the threshold, and confirmed that all of these receptors are either inside the property boundary or located along the property fence line. The excess cancer risk at the MEIW is 0.26 in a million (PPP 2015z). All of these risk numbers (except PMI) are less than the Energy Commission staff's significant impact threshold of 10 in a million. Therefore, staff concludes that there is no significant cancer health risk from the toxic air emissions from construction activities.

The predicted chronic health index at the PMI, MEIR and MEIW are 0.0167, 0.00201, and 0.00167, respectively (PPP 2015z). The chronic hazard indices for diesel exhaust

[7] The construction period of P3 is expected to last 1.5 years (i.e.18 months) (PPP 2015a, Section 4.1.3.5). The exposure time for the demolition were assumed to be 1.3 years as the demolition activity was projected to last about 15 months (PPP 2015y, Section 1.4).

during construction activities are all lower than the significance level of 1.0. This means that there would be no chronic non-cancer impacts expected from construction activities.

The predicted acute health index at the PMI, MEIR and MEIW are 0.00883, 0.0081, and 0.00883, respectively (PPP 2015z). The acute hazard indices for diesel exhaust during construction activities are all lower than the significance level of 1.0. This means that there would be no chronic non-cancer impacts expected from construction activities.

Demolition of Mandalay Unit 1 and 2

The HRA results for demolition activities indicate that a maximum off-property residential cancer risk (MEIR) of 1.25 in 1 million. This impact is below the significance threshold of 10 in 1 million. Even though the PMI (i.e. 11.48) is higher than the threshold, it is located within the property boundary of the project. Staff also checked all other receptors within the computer model output domain with risk numbers higher than the threshold, and confirmed that all of these receptors are either inside the property boundary or located along the property fence line. The excess cancer risk at the MEIW is 0.17 in a million (PPP 2015jj and CEC 2015oo). All of these risk numbers (except PMI) are less than the Energy Commission staff's significant impact threshold of 10 in a million. Therefore, staff concludes that there would be is no significant public health impacts from the demolition toxic air emissions.

The predicted chronic health index at the PMI, MEIR and MEIW are 0.0101, 0.00108, and 0.0101, respectively (PPP 2015jj and CEC 2015oo). The chronic hazard indices for diesel exhaust during demolition activities are all lower than the significance level of 1.0. This means that there would be no chronic non-cancer impacts expected from demolition activities.

The predicted acute health index at the PMI, MEIR and MEIW are 0.0081, 0.0029, and 0.081, respectively (PPP 2015jj and CEC 2015oo). The acute hazard indices for diesel exhaust during demolition activities are all lower than the significance level of 1.0. This means that there would be no acute non-cancer impacts expected from demolition activities.

Public Health Table 2
Construction/Demolition Hazard/Risk from DPMs

		Activities [a]		Significance Level [b]	Significant? [b]
Derived Cancer Risk (per million)	PMI	Construction	**15.3**	10	No (onsite impact)
		Demolition	**11.48**	10	No (onsite impact)
	MEIR	Construction	2.7	10	No
		Demolition	1.25	10	No
	MEIW	Construction	0.26	10	No
		Demolition	0.17	10	No
Chronic HI (dimensionless)	PMI	Construction	0.0167	1	No
		Demolition	0.0101	1	No
	MEIR	Construction	0.00201	1	No
		Demolition	0.00108	1	No
	MEIW	Construction	0.0167	1	No
		Demolition	0.0101	1	No
Acute HI (dimensionless)	PMI	Construction	0.00883	1	No
		Demolition	0.0081	1	No
	MEIR	Construction	0.00255	1	No
		Demolition	0.0029	1	No
	MEIW	Construction	0.00883	1	No
		Demolition	0.0081	1	No

Sources: PPP 2015z (Section 4.9.2), PPP 2015jj and CEC 2015oo.
[a] The modeling year is 2014.
[b] The significance level is a level that does not necessarily mean that adverse impacts are expected, but rather that further analysis and refinement of t**he exposure assessment is warranted.**

Based on the results of HRA, and considering the following two additional factors: (1) the potential exposure of DPM would be sporadic and limited in length and (2) the predicted incremental increase in cancer risk at the MEIR and MEIW and chronic health index at the PMI, MEIR, and MEIW are less than the significance thresholds of ten in one million and 1.0, respectively, staff concludes that impacts associated with the DPM from anticipated P3 construction and demolition activities would be less than significant.

Conditions of Certification **AQ-SC5** (Diesel-Fueled Engine Control) in the **Air Quality** section of this PSA would ensure that cancer-related impacts of diesel exhaust emissions for the public and off-site workers are mitigated during construction/demolition to a point where they are not considered significant. The potential levels of criteria pollutants from operation of construction/demolition-related equipment are discussed in staff's **Air Quality** section along with mitigation measures and related conditions of certification. The pollutants of most concern in this regard are particulate matter (PM), carbon monoxide (CO), sulfur dioxide (SO_2), and nitrogen dioxide (NO_2).

Valley Fever

P3 is proposed for an area where the disease of Valley Fever (*Coccidioidomycosis)* may sometimes be present. Construction could disturb a certain percentage of approximately 3 acres of top soil that could harbor the *Coccidioides* spores, possibly exposing humans to the risk of Valley Fever. On-site workers and visitors and nearby residents could be exposed from inhaling these fungal spores from wind-blown dust generated from soil excavation work.

To minimize the risk of getting Valley Fever, Center for Disease Control and Prevention (CDC) recommends the following measures (CDC 2014):

- Wear an N95 mask if a person must be in or near a dusty environment, such as a construction zone
- Avoid activities that involve close contact to dust including yard work, gardening, and digging
- Use air quality improvement measures indoors such as HEPA filters
- Take prophylactic anti-fungal medication if deemed necessary by a person's healthcare provider
- Clean skin injuries well with soap and water, especially if they have been exposed to soil or dust

The California Department of Public Health (CDPH) also recommends that "those exposed to dust during their jobs or outside activities in these areas should consider respiratory protection, such as a mask, during such activities."

Based on CDC and CDPH's recommendations, staff recommends that project workers in the vicinity of any project's dust generation areas wet the soil before any excavation activities. Such workers should also wear protective masks and stay indoors during dust storms and close all doors and windows to avoid dust inhalation. Staff also considers the applicant's dust suppression plans discussed in the **Air Quality** section and required under Conditions of Certification, AQ-SC3 and AQ-SC4 adequate to minimize the risk of workers getting exposed to Valley Fever in areas where *Coccidioides* spores may be found.

The potential Valley Fever risk to individuals away from the project site stems from the potential of the spores of the Valley Fever fungus to be released into the air as a result of grading and excavating activities during construction. Because the spores disperse similarly to dust, mitigation measures used to control dust would be effective to control spore dispersal. The applicant provided specific dust mitigation measures in Appendix C-6 of AFC (PPP 2015a, Section 4.9.2.2). In the **Air Quality** Section of this FSA, staff recommends requirement of specific mitigation measures, including **AQ-SC3** (Construction Fugitive Dust Control) and **AQ-SC4** (Dust Plume Response Requirement) for the purposes of preventing all fugitive dust plumes from leaving the project boundary. Keeping the dust plumes within the project boundary would limit potential for exposure to Valley Fever to adjacent residents, farm workers, and members of the public traveling or recreating in proximity to P3.

PROPOSED PROJECT'S OPERATIONAL IMPACTS AND MITIGATION MEASURES

Emission Sources

As previously noted, the emission sources of proposed P3 would be: one new natural gas-fired, simple-cycle, air-cooled, nominal 262-MW generating facility, one new diesel emergency generator, one existing natural gas-fired peaker combustion turbine (MGS

Unit 3), and one existing natural gas–fired boiler (MSG Unit 1). Pollutants that could potentially be emitted during operation are listed in **Public Health Table 3,** including both criteria and non-criteria pollutants. These pollutants include certain volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs). Criteria pollutant emissions and impacts are examined in staff's **Air Quality** analysis. Since the facility would use dry cooling, there would be no emissions of toxic metals or VOCs from cooling tower mist or drift and no health risk from the potential presence of the Legionella bacterium responsible for Legionnaires' disease.

The health risk from exposure to each project-related pollutant is assessed using the "worst case" emission rates and impacts. Maximum hourly emissions are used to calculate acute (one-hour) noncancer health effects, while estimates of maximum emissions on an annual basis are used to calculate cancer and other chronic (long-term) health effects.

In Tables 4.9-1, Table 4.9-2 and Table 4.9-3 of the AFC (PPP 2015a) the applicant lists the specific non-criteria pollutants that would be emitted as combustion byproducts from the natural gas-fired turbines, boiler and diesel emergency engine. The detailed emission summaries and calculations are presented in Appendix C-8 of the AFC (PPP 2015a). The emission numbers in Table C-8.4 of Applicant's Responses to Energy Commission Data Request, Set 2 (PPP 2015z) are a combination of the numbers from AP-42 and ARB California Air Toxics Emission Factor (CATEF) database. The applicant used the emission numbers mostly from AP-42, except the one for Formaldehyde was from ARB CATEF.

The regulation applied to gas turbines located at major sources of HAP emissions is 40CFR Part 63 Subpart YYYY. A major source is defined as a facility with emissions of ten tons per year (tpy) or more of a single HAP or 25 tpy or more of a combination of HAPs based on the potential to emit. According to Table 4.1-24 (PPP 2015z), the single highest HAP emissions, formaldehyde, from the facility is 2.89 tpy, which is less than 10 tpy. The total combined HAPs from all sources is 4.72 tpy, which is also less than 25 tpy. Therefore, the P3 is not a major source of HAPs and is not subject to this subpart.

Public Health Table 3
The Main Pollutants Emitted from the Proposed Project

Criteria Pollutants	Non-criteria Pollutants
Carbon monoxide (CO)	Acetaldehyde
Oxides of nitrogen (NO_x)	Acrolein
Particulate matter (PM10 and PM2.5)	Ammonia
Oxides of sulfur (SO_2)	Benzene
Volatile Organic Compounds (VOCs)	1,3-Butadiene
	Ethyl Benzene
	Formaldehyde
	Hexane
	Naphthalene
	Polycyclic Aromatic Hydrocarbons (PAHs)
	Propylene
	Propylene oxide
	Toluene
	Xylene
	Diesel PM

Source: PPP 2015a, Table 4.9-1, Table 4.9-2 and Table 4.9-3.

Hazard Identification

Numerous health effects have been linked to exposure to TACs, including development of asthma, heart disease, Sudden Infant Death Syndrome (SIDS), respiratory infections in children, lung cancer, and breast cancer (OEHHA, 2003). According to the P3 AFC, the toxic air contaminants emitted from the natural gas-fired CTGs include acetaldehyde, acrolein, ammonia, benzene, 1,3-butadiene, ethyl benzene, formaldehyde, napthalene, polycyclic aromatics, propylene oxide, toluene and xylene. **Public Health Table 3** and **Public Health Table 4** list each such pollutant which staff finds to be typical of the proposed P3 and similar projects.

Public Health Table 4
Types of Health Impacts and Exposure Routes Attributed to Toxic Emissions

Substance	Oral Cancer	Oral Noncancer	Inhalation Cancer	Noncancer (Chronic)	Noncancer (Acute)
Acetaldehyde			✔	✔	✔
Acrolein				✔	✔
Ammonia				✔	✔
Benzene			✔	✔	✔
1,3-Butadiene			✔	✔	
Ethyl Benzene			✔	✔	
Formaldehyde			✔	✔	✔
Napthalene		✔	✔	✔	
Polycyclic Aromatic Hydrocarbons (PAHs)	✔		✔		
Propylene Oxide			✔	✔	✔
Toluene				✔	✔
Xylene				✔	✔

Source: OEHHA / ARB 2015 and PPP 2015a, Table 4.9-3

Exposure Assessment

Public Health Table 4 shows how TACs would contribute to the total risk obtained from the risk analysis. The applicable exposure pathways for the toxic emissions include inhalation, home-grown produce, dermal (through the skin) absorption, soil ingestion, fish ingestion, and mother's milk (PPP 2015a, Section 4.9.2.4). This method of assessing health effects is consistent with OEHHA's Air Toxics Hot Spots Program Risk Assessment Guidelines (OEHHA 2003) referred to earlier.

The next step in the assessment process is to estimate the project's incremental concentrations using a screening air dispersion model and assuming conditions that would result in maximum impacts. The applicant used the EPA-recommended air dispersion model, AERMOD, along with five years (2009–2013) of compatible meteorological data from the Oxnard Airport monitoring station (PPP 2015a, Section 4.1.1.2 and Appendix C-1).

Dose-Response Assessment

Public Health Table 5 (modified from AFC Table 4.9-3, including neither oral cancer potency factor nor chronic oral REL[8]) lists the toxicity values used to quantify the cancer and noncancer health risks from the project's combustion-related pollutants. The listed toxicity values include RELs and the cancer potency factors are published in the OEHHA's Guidelines (OEHHA 2003) and OEHHA/ARB Consolidation Table of OEHHA/ARB Approved Risk Assessment Health Values (ARB 2015). RELs are used to calculate short-term and long-term noncancer health effects, while the cancer potency factors are used to calculate the lifetime risk of developing cancer.

[8] Except for PAHs, there are neither oral cancer slope factors nor chronic oral reference exposure levels available for these toxic air contaminants. The oral cancer slope factor for PAHs is 12 $(mg/kg\text{-}d)^{-1}$.

Public Health Table 5
Toxicity Values Used to Characterize Health Risks

Toxic Air Contaminant	Inhalation Cancer Potency Factor $(mg/kg\text{-}d)^{-1}$	Chronic Inhalation REL $(\mu g/m^3)$	Acute Inhalation REL $(\mu g/m^3)$
Acetaldehyde	0.010	140	470 (1-hr) 300 (8-hr)
Acrolein	—	0.35	2.5 (1-hr) 0.7 (8-hr)
Ammonia	—	200	3,200
Benzene	0.10	60	1,300
1,3-Butadiene	0.60	20	—
Ethyl Benzene	0.0087	2,000	—
Formaldehyde	0.021	9	55 (1-hr) 9 (8-hr)
Hexane	—	7000	—
Napthalene	0.12	9.0	—
Polycyclic Aromatic Hydrocarbons (PAHs)	3.9	—	—
Propylene Oxide	0.013	3	3100
Toluene	—	300	37,000
Xylene	—	700	22,000

Sources: ARB 2015 and PPP 2015a, Table 4.9-3

Characterization of Risks from TACs

As described above, the last step in an HRA is to integrate the health effects and public exposure information, provide quantitative estimates of health risks resulting from project emissions, and then characterize potential health risks by comparing worst-case exposure to safe standards based on known health effects.

The applicant's HRA was prepared using the ARB's HARP model, version 2 (ARB, 2015). Emissions of non-criteria pollutants from the project were analyzed using emission factors. As noted previously, these emission factors were obtained mainly from the U.S. EPA AP-42 emission factors and ARB CATEF. Air dispersion modeling combined the emissions with site-specific terrain and meteorological conditions to analyze the mean short-term and long-term concentrations in air for use in the HRA. Ambient concentrations were used in conjunction with cancer unit risk factors and RELs to estimate the cancer and noncancer risks from operations. In the following sub-sections, staff reviews and summarizes the work of the applicant, and evaluates the adequacy of the applicant's analysis by conducting an independent HRA.

The HRA was conducted for the general population, nearby residences, off-site workers and sensitive receptors. Staff only evaluates the health impact on off-site workers because on-site workers are protected by Cal OSHA and are not required to be evaluated under the Hot Spots Program, unless the worker also lives on the facility site or property. The sensitive receptors, as previously noted, are subgroups that would be at greater risk from exposure to emitted air toxics, and include the very young, the elderly, and those with existing illnesses.

Effective August 2012, all air toxics HRAs should use the new OEHHA's Air Toxics Hot

Spots Program Risk Assessment Guideline (OEHHA 2012) which recommends breaking down exposure/risk by age group using age-dependent adjustment factors (i.e. age sensitivity factors) to calculate the cancer risk. This new methodology is used to reflect the fact that exposure varies among different age groups and exposure occurring in early life has a higher weighting factor.

Health risks potentially associated with ambient concentrations of carcinogenic pollutants were calculated in terms of excess lifetime cancer risks. The total cancer risk at any specific location is found by summing the contributions from the individual carcinogens. Health risks from non-cancer health effects were calculated in terms of hazard index as a ratio of ambient concentration of TACs to RELs for that pollutant.

The following is a summary of the most important elements of HRA for the P3:

- the analysis was conducted using the latest version of ARB/OEHHA Hotspots Analysis and Reporting Program Version 2 (HARP2)[9], which incorporates methodology presented in OEHHA's 2015 Guidance;
- emissions are based upon concurrent operation of all on-site sources, including one simple-cycle natural-gas-fired turbine, one natural-gas-fired peaker combustion turbine (MGS Unit 3), one new diesel emergency generator and one boiler (MGS Unit 1);
- exposure pathways included inhalation, soil ingestion, fish ingestion, dermal absorption, home grown produce, and mother's milk;
- the local meteorological data, local topography, grid, residences and sensitive receptors, source elevations, and site-specific and building-specific input parameters used in the HARP2 model were obtained from the AFC and modeling files provided by the applicant;
- the emission factors and toxicity values used in HRA were obtained from the AFC. The toxicity values are listed in **Public Health Table 5**.

Cancer Risk at the Point of Maximum Impact (PMI)

The most significant result of HRA is the numerical cancer risk for the maximally exposed individual (MEI) which is the individual located at the point of maximum impact (PMI) and risks to the MEI at a residence (MEIR). As previously noted, human health risks associated with emissions from the proposed project are unlikely to be higher at any other location than at the PMI. Therefore, if there is no significant impact associated with concentrations at the PMI location, it can be reasonably assumed that there would not be significant impacts in any other location in the project area.

The cancer risk to the MEI at the PMI is referred to as the Maximum Incremental Cancer Risk (MICR). However, the PMI (and thus the MICR) is not necessarily associated with actual exposure because in many cases, the PMI is in an uninhabited area. Therefore, the MICR is generally higher than the maximum residential cancer risk. MICR is based on 24 hours per day, 365 days per year, 70-year lifetime exposure. The potential

[9] HARP2 can be downloaded from ARB's HARP website. http://www.arb.ca.gov/toxics/harp/harp.htm

exposure level for off-site nonresidential workers and those involved in recreational activities would thus be less. As shown in **Public Health Table 6**, total worst-case individual cancer risk is 1.3 in one million at the PMI. The PMI for impacts from operation is on the east boundary of the P3. As **Public Health Table 6** shows, the cancer risk value at PMI is below the significance level, ten in one million, indicating that no significant adverse cancer risk is expected.

Chronic and Acute Hazard Index (HI)

The screening HRA for the project included emissions from all sources and resulted in a maximum chronic Hazard Index (HI) of 0.00022 and a maximum acute HI of 0.013 (P3 2015c). As **Public Health Table 6** shows, both acute and chronic hazard indices are less than 1.0, indicating that no short- or long-term adverse health effects such as asthma and other respiratory effects are expected.

Project-Related Impacts at Area Residences

Staff's specific interest in the risk to the maximally exposed individual in a residential setting (MEIR) is because this risk most closely represents the maximum project-related lifetime cancer risk. Residential risk is presently assumed by the regulatory agencies to result from exposure lasting 24 hours per day, 365 days per year, over a 70-year lifetime. Residential risks were presented in terms of MEIR and health hazard index (HI) at residential receptors in **Public Health Table 6**. Exposure to off-site nonresident workers or recreational users would be lower with correspondingly lower health risks. The cancer risk for the MEIR, is 0.33, which is below the significance level. The maximum resident chronic HI and acute HI are 0.0001 and 0.0062, respectively. They are both less than 1.0, indicating that no short- or long-term adverse health effects are expected at these residents.

Risk to Workers

The cancer risk to potentially exposed both project and offsite nonresidential workers was presented in terms of risk to the maximally exposed individual worker (or MEIW at PMI) and is summarized in **Public Health Table 6**. The worker is assumed to be exposed at the work location 8 hours per day, instead of 24; 245 days per year, instead of 365; and for 40 years, instead of 70 (PPP 2015z, Table 4.9-4). As shown in **Public Health Table 6**, the cancer risk for workers at MEIW (i.e. 0.1 in 1 million) is below the significance level. The maximum worker chronic HI and acute HI are 0.00022 and 0.013, respectively. They are both less than 1.0, indicating that no short- or long-term adverse health effects are expected among exposed workers.

Risk to Sensitive Receptors

Two sensitive receptors are located close to P3. Leite Family Daycare is located approximately 1 mile (5,500 feet) to the southeast of P3. The highest cancer risk at this sensitive receptor is 0.268 in one million, the chronic HI is 0.00001 and the acute HI is 0.0059. JN Care Home is located approximately 1.82 miles southeast of the project boundary. The highest cancer risk at this sensitive receptor is 0.287 in one million, the chronic HI is 0.000035 and the acute HI is 0.0057. All risks are below their significance levels meaning that there would be an insignificant risk of asthma and other noncancer

health impacts. Exposure to off-site nonresident workers or recreational users, would be lower with correspondingly lower health risks

In **Public Health Table 6**, it is notable that all the cancer and noncancer risks from P3 operation would be below their respective significance levels. This means that no health impacts would occur within all segments of the surrounding population. Therefore, staff concludes there is no need for conditions of certification to protect public health during facility operation.

Public Health Table 6
Cancer Risk and Chronic Hazard from P3 Operations [a]

Receptor Location	Cancer Risk (per million)	Chronic HI[d]	Acute HI[d]
PMI[a]	1.3	0.00022	0.013
Residence MEIR[b]	0.33	0.0001	0.0062
Worker MEIW[c]	0.1	0.00022	0.013
Sensitive Receptor (Leite Family Daycareis)	0.268	0.00001	0.0059
Sensitive Receptor (JN Care Home)	0.287	0.000035	0.0057
Significance level	10	1	1
Significant?	No	No	No

Sources: PPP 2015z, Table 4.9-4
[a] PMI = Point of Maximum Impact
[b] MEIR = MEI of residential receptors. Location of the residence of the highest risk with a 70-year residential scenario.
[c] MEIW = MEI for offsite workers. Occupational exposure patterns assuming standard work schedule, i.e. exposure of eight hours/day, five days/week, 49 weeks/year for 40 years.
[d] HI = Hazard Index

Cancer Burden

Cancer burden is defined as the estimated increase in the occurrence of cancer cases in a population resulting from exposure to carcinogenic air contaminants. In other words, it is a hypothetical upper-bound estimate of the additional number of cancer cases that could be associated with toxic air emissions from the project. Cancer burden is calculated as the maximum product of any potential carcinogenic risk greater than 1 in one million, and the number of individuals at that risk level. Therefore, if a predicted derived adjusted cancer risk is greater than 1 in 1 million, the cancer burden is calculated for each census block receptor. OEHHA requires a 70-year exposure duration to estimated cancer burden or provide an estimate of population-wide risk (OEHHA 2015, page 8-1). The assumed exposure duration for nonresidential off-site workers or recreational users would be much less.

According to applicant's calculation, the HRA shows that the area with a carcinogenic risk above 1-in-one-million extends only for approximately 50 meters east of the project fence line within the existing transmission yard. Because no residential receptors are located in this small area, the potential cancer burden is zero (PPP 2015z, Table 4.9-4).

Staff conducted another calculation for cancer burden. The area with a carcinogenic risk above 1-in-one-million is located in Census Tract 29.05 with total population of 5,478[10]. Cancer burden is then calculated as the maximum product of the highest carcinogenic risk of this census block (i.e., 1.3 in one million) and the number of individuals in this census block (i.e. 5,478), and the result is 0.0071. Therefore, the cancer burden is estimated to be less than one cancer case resulting from exposure to TACs of P3 operation.

CUMULATIVE IMPACTS AND MITIGATION

A project would result in a significant adverse cumulative impact if 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., tit. 14, § 15130). As for cumulative impacts for cumulative hazards and health risks, if the implementation of the proposed project, as well as the past, present, and probable future projects, would not cumulatively contribute to regional hazards, then it could be considered a less than cumulatively considerable impact.

The maximum cancer risk and non-cancer hazard index (both acute and chronic) for operations emissions from the P3 estimated independently by the applicant, staff, and the VCAPCD (PPP 2016s) are all below levels of corresponding significance. While air quality cumulative impacts could occur with sources within a six-mile radius, cumulative public health impacts are usually not significant unless the emitting sources are extremely close to each other, within a few blocks, not miles. SCE's McGrath Peaker is located approximately 0.25 miles southeast of P3, but it only runs occasionally which staff regards as not contributing significantly to the risks of TACs. All other identified facilities are at least three miles away from P3 (For example, the nearest planned project is Kaiser Medical Center, which is 3.71 miles away). Staff, therefore, concludes that the proposed P3 project, even when combined with these projects, would not contribute to cumulative impacts in the area of public health.

Land Uses in the Area Surrounding P3 including Farming.

Concerns have been raised that farming activities include pesticide use, and pesticide exposures contribute to health risks to farm workers and local residents. Pesticide use is regulated by CA Department of Pesticide Regulation and monitored by ARB. The applicable regulations are intended to ensure the safe use of each pesticide whose use might produce background levels that could be measurable. The closest farmland to P3 is approximately 0.15 miles. Since staff's analysis has shown that P3 construction and operation would lead to toxic emissions below levels of potential health significance, staff does not regard P3 as potentially contributing significantly to any health effects from existing pesticide use in the area.

[10] More information regarding Census Tract 29.05: http://www.usboundary.com/Areas/Census%20Tract/California/Ventura%20County/Census%20Tract%2029.05/439900

Modeled facility-related risks would be much lower for more distant locations. Given the previously noted conservatism in the calculation method used, the actual risks would likely be much smaller. Therefore, staff does not consider the incremental risk estimate from P3's operation as suggesting a potentially significant contribution to the area's overall or cumulative cancer risk that includes the respective risks from the background pollutants from all existing area sources.

COMPLIANCE WITH LORS

Staff has conducted a HRA for the proposed P3 and found no potentially significant adverse impacts for any receptors, including sensitive receptors. In arriving at this conclusion, staff notes that its analysis complies with all directives and guidelines from the Cal/EPA Office of Environmental Health Hazard Assessment and the California Air Resources Board. Staff's assessment is biased towards protection of public health and takes into account the most sensitive individuals in the population. Using extremely conservative (health-protective) exposure and toxicity assumptions, staff's analysis demonstrates that members of the public potentially exposed to toxic air contaminant emissions of this project, including sensitive receptors such as the elderly, infants, and people with pre-existing medical conditions, would not experience any acute or chronic significant health risk or any significant cancer risk as a result of that exposure.

Staff incorporated every conservative assumption called for by state and federal agencies responsible for establishing methods for analyzing public health impacts. The results of that analysis indicate that there would be no direct or cumulative significant public health impact on any population in the area. Therefore, staff concludes that construction and operation of the P3 would comply with all applicable LORS regarding long-term and short-term project impacts in the area of public health.

Additionally, staff reviewed **Socioeconomics Figure 1**, which shows the environmental justice population (see the **Socioeconomics** and **Executive Summary** sections of this PSA for further discussion of environmental justice) is greater than 50 percent within a six-mile buffer of the proposed P3 site. Because no members of the public, off-site nonresidential workers, or recreational users would potentially be exposed to toxic air contaminant emissions of this project at significant levels, no one would experience any acute or chronic cancer or non-cancer effects of health significance during construction and operation. Given such lack of impacts, there would be no case of disproportionate public health impacts within the identified environmental justice population.

CONCLUSIONS

Staff has analyzed the potential public health risks associated with construction and operation of the P3 using a highly conservative methodology that accounts for impacts on the most sensitive individuals in any given population. Staff concludes that there would be no significant health impacts from the project's air emissions. Exposure to off-site nonresident workers or recreational users would be lower with correspondingly lower health risks. According to the results of staff's HRA, both construction/demolition

and operating emissions from the P3 would not contribute significantly or cumulatively to morbidity or mortality in any age or ethnic group residing in the project area.

PROPOSED CONDITIONS OF CERTIFICATION

No public health conditions of certification are proposed by staff.

ACRONYMS

ACM	Asbestos Containing Materials
AFC	Application for Certification
ARB	California Air Resources Board
Btu	British thermal unit
CAA	Clean Air Act (Federal)
CAL/EPA	California Environmental Protection Agency
CAPCOA	California Air Pollution Control Officers Association
CEC	California Energy Commission (or Energy Commission)
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CTGs	Combustion Turbine Generators
CO	Carbon Monoxide
CO2	Carbon Dioxide
DPMs	Diesel Particulate Matter
FSA	Final Staff Assessment
HAPs	Hazardous Air Pollutants
HARP	Hot Spots Reporting Program
HARP2	Hot Spots Reporting Program Version 2
HEPA	High Efficiency Particulate Air
HRA	Health Risk Assessment
HI	Hazard Index
lbs	Pounds
LORS	Laws, Ordinances, Regulations and Standards
MACT	Maximum Achievable Control Technology
MEIR	Maximally Exposed Individual Resident

MEIW	Maximally Exposed Individual Worker
MICR	Maximum Individual Cancer Risk
mg/m3	Milligrams per Cubic Meter
MMBtu	Million British thermal units
MW	Megawatts (1,000,000 Watts)
NO	Nitric Oxide
NO2	Nitrogen Dioxide
NO3	Nitrates
NOx	Oxides of Nitrogen or Nitrogen Oxides
O2	Oxygen
O3	Ozone
OEHHA	Office of Environmental Health Hazard Assessment
OSHA	Occupational Safety and Health Administration
PAHs	Polycyclic Aromatic Hydrocarbons
PM	Particulate Matter
PM10	Particulate Matter less than 10 microns in diameter
PM2.5	Particulate Matter less than 2.5 microns in diameter
PMI	Point of Maximum Impact
ppm	Parts Per Million
ppmv	Parts Per Million by Volume
ppmvd	Parts Per Million by Volume, Dry
PSA	Preliminary Staff Assessment (this document)
P3	Puente Power Project (proposed project)
RELs	Reference Exposure Levels
SIDS	Sudden Infant Death Syndrome
SO2	Sulfur Dioxide

SO3	Sulfate
SOx	Oxides of Sulfur
SRP	Scientific Review Panel
TACs	Toxic Air Contaminants
T-BACT	Best Available Control Technology for Toxics
TDS	Total Dissolved Solids
tpy	Tons per Year
VCAPCD	Ventura County Air Pollution Control District
VOCs	Volatile Organic Compounds

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SOCIOECONOMICS

Lisa Worrall

SUMMARY OF CONCLUSIONS

Staff concludes that construction and operation of the Puente Power Project (P3) would not cause significant adverse direct, indirect, or cumulative socioeconomic impacts on the project area's housing, law enforcement services, or parks. Staff also concludes 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 Condition of Certification **SOCIO-1** would ensure project compliance with applicable laws, ordinances, regulations, and standards (LORS).

Staff concludes the socioeconomics impacts from the proposed P3 are less than significant. Therefore, the socioeconomic impacts are less than significant for any population within the six-mile radius of P3, including the environmental justice (EJ) population represented in **Socioeconomics Figure 1** and **Table 3**.

INTRODUCTION

Staff's socioeconomics impact analysis evaluates the project's induced changes from construction and operation on the following:

- existing population (population influx)
- employment patterns (temporary/permanent job creation and labor supply)
- local communities (housing) and resources (parks)
- law enforcement services
- estimated beneficial economic effects

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Socioeconomics Table 1 contains socioeconomics LORS applicable to the proposed project.

Socioeconomics Table 1
Laws, Ordinances, Regulations, and Standards

Applicable LORS	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 65995-65998	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.

SETTING

The proposed P3 is located in the city of Oxnard, Ventura County, within the boundaries of the existing Mandalay Generation Station (MGS) industrial site (393 North Harbor Boulevard). The existing power plant has three operating generating units (MGS units 1-3). If P3 is licensed, units 1 and 2 would be demolished, and one new unit would be constructed (P3), leaving MGS unit 3 and the new P3 unit operating. The project would upgrade and repurpose existing maintenance, warehouse, transmission interconnections, and ancillary systems on the MGS site to the extent feasible.

PROJECT STUDY AREAS

The applicant identified the following study areas for socioeconomic-related project impacts (PPP 2015a, pg. 4.10-1):

- population and housing
- Ventura County, including the cities of Oxnard, Ventura, Camarillo, Simi Valley, and Thousand Oaks, as well as Los Angeles County
- public services, utilities, schools, and local finances
- Ventura County
- regional workforce, sales tax, and indirect and induced economic project effects (including IMPLAN modeling[1])
- Ventura and Los Angeles counties
- EJ impacts within a six-mile radius of the project site

Staff considers the study area for law enforcement and parks to be the city of Oxnard and considers the study area for population and housing to be the cities of Oxnard, Port Hueneme and San Buenaventura (Ventura).

USING THE US CENSUS BUREAU'S DECENNIAL CENSUS AND AMERICAN COMMUNITY SURVEY IN STAFF ASSESSMENTS

After the 2000 decennial Census, the detailed social, economic, and housing information previously collected on the decennial census long form became the American Community Survey (ACS) (US Census 2013a). The U.S. Census Bureau's ACS is a nationwide, continuous survey that will continue to collect long-form-type information throughout the decade. 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 collects data from a sample of the population based on information compiled continually and aggregated into one- 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

[1] IMPLAN is and input/output model used to estimate the indirect and induced economic benefits of a project based on the direct expenditures.

provide official population counts in between censuses. Instead, the Census Bureau's Population Estimates Program continues 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)).[2] Census Bureau staff recommends the use of data no smaller than the census tract level.[3,4] ACS one-year estimates cannot reliably capture data from smaller geographical areas, as the population size does not allow for an adequate sample size. The aggregated five-year estimates provide sufficient sample size to yield reliable data in smaller geographies (e.g. less populated cities). Thus, Energy Commission staff uses data from the five-year estimates in the analysis to better represent a wider range of populated areas. A certain level of variability is associated with the estimates because they come from a sample population. This variability is expressed as a margin of error (MOE) which 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 more than 15 percent a cause for caution when interpreting patterns in the data (US Census 2009). When 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 combining estimates across geographic areas.

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 minority and below-poverty-level populations potentially affected by the proposed project. Due to the changes in the data collection methods used by the US Census Bureau, Energy Commission staff's screening process relies on 2010 decennial US Census data to determine the number of minority populations and the most current data from the ACS to evaluate the presence of individuals living below the federal poverty level.

[2] 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. **Source:** http://www.census.gov/dmd/www/glossary.html.

[3] 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. **Source:** http://www.census.gov/dmd/www/glossary.html.

[4] 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.

Staff's demographic screening is designed to identify the presence of minority or below-poverty-level populations, or both, within a six-mile radius of the proposed project site. Staff uses a six-mile radius around the proposed site, based on the parameters for dispersion modeling used in staff's air quality analysis, to obtain data to gain a better understanding of the demographic makeup of the communities potentially impacted by the project.

When an EJ population is identified, staff in 11 technical disciplines [5] considers the project's impacts on this population.

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
- Hispanic

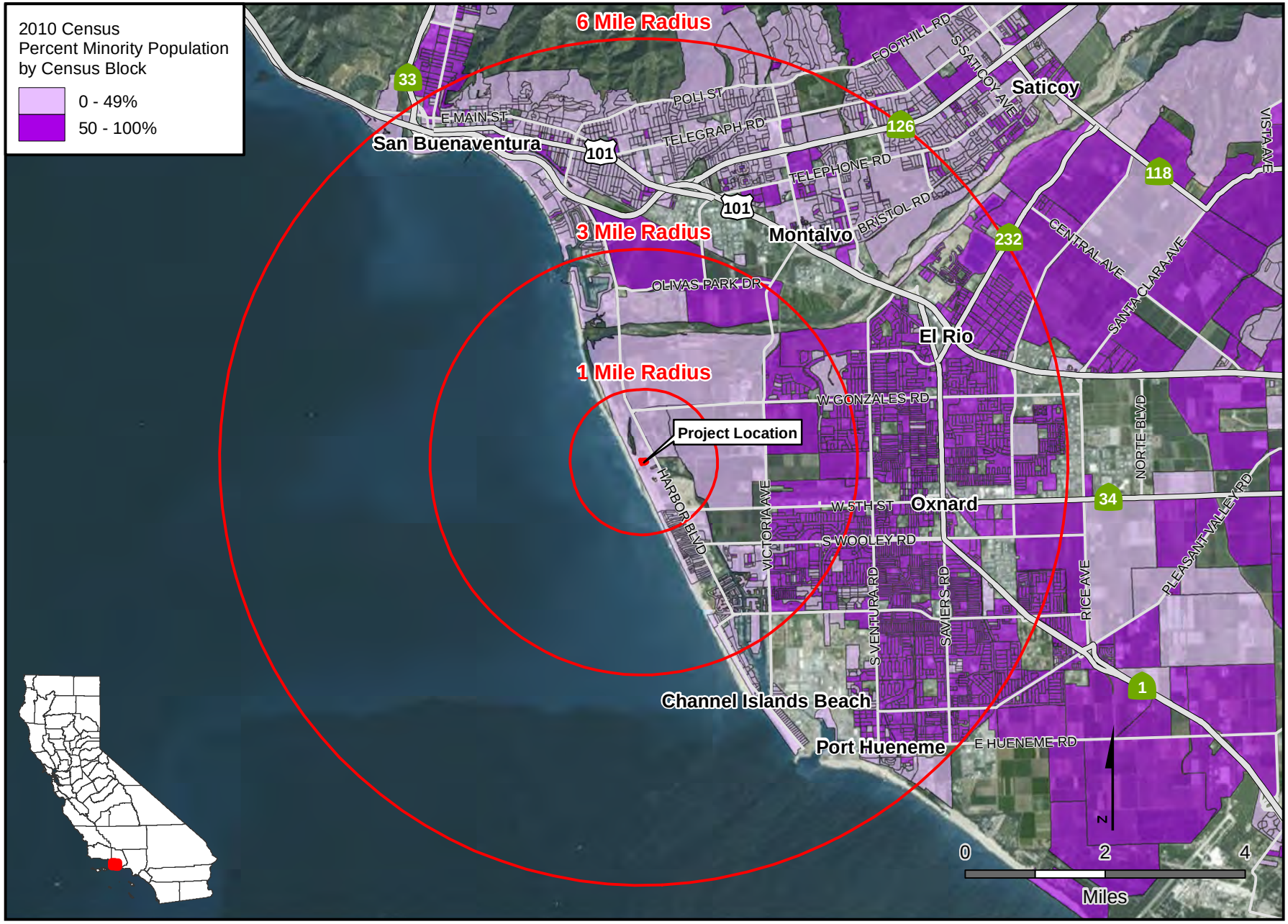
Staff identifies an EJ population when one or more U.S. Census blocks in the six-mile radius have a minority population greater than or equal to 50 percent. **Socioeconomics Figure 1** (using a one-, three-, and six-mile radius) shows that the population in these census blocks represents an EJ population based on race and ethnicity as defined by *Environmental Justice: Guidance Under the National Environmental Policy Act*. The population in the six-mile radius lives primarily within the cities of Oxnard, Port Hueneme, and San Buenaventura (Ventura) and portions of Ventura County.

In an effort to update population data since the 2010 decennial U.S. Census, staff has included **Socioeconomics Table 2** to provide the reader a comparison of decennial and ACS data for minority populations. As shown in the table below, the percent of minority populations in the cities of Oxnard and San Buenaventura have remained consistent since 2010, while there has been about a five percent increase in minority populations in Port Hueneme.

[5] The 11 technical disciplines are Air Quality, Hazardous Materials Management, Land Use, Noise and Vibration, Public Health, Socioeconomics, Soil and Water Resources, Traffic and Transportation, Transmission Line Safety and Nuisance, Visual Resources, and Waste Management.

SOCIOECONOMICS - FIGURE 1

Puente Power Project (P3) - Census 2010 Minority Population by Census Block



SOCIOECONOMICS

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Census 2010 PL 94-171 Data

Socioeconomics Table 2

Minority Population Data Within the Project Area

Cities in the six-mile radius		Total Population	Not Hispanic or Latino: White alone	Minority	Percent Minority (%)
Oxnard	April 1, 2010 Census [1]	197,899	29,410	168,489	85.14
	2010-2014 Estimate [2]	201,744 ±157	28,493 ±1,301	173,25 ±1,310	85.88 ±0.65
Port Hueneme	April 1, 2010 Census	21,723	7,291	14,432	66.44
	2010-2014 Estimate	21,949 ±63	6,263 ±631	15,686 ±634	71.47 ±2.88
San Buenaventura (Ventura)	April 1, 2010 Census	106,433	63,879	42,554	39.98
	2010-2014 Estimate	108,449 ±55	64,312 ±1,295	44,137 ±1,296	40.70 ±1.20

Notes: Staff's analysis of the 2010 – 2014 estimates returned CV values less than 15, indicating the data is reliable. **Sources:** [1] US Census 2010a and [2] US Census 2015a.

Below-Poverty-Level-Populations

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 (city) from the ACS Five-Year Estimates[6] (US Census 2015b). The CEQ and U.S. EPA guidance documents identify a 50-percent threshold to determine whether minority populations are considered EJ populations, but do not provide a similar threshold for below-poverty-level populations. In the absence of thresholds, staff looks at the below-poverty-level populations in the six-mile radius and compares them to other appropriate reference geographies, such as Census County Divisions (CCDs), the county, or the state, to determine whether the below-poverty-level populations are less than, more than, or about the same as the populations in the comparison geographies. U.S. EPA guidance notes that a demographic comparison to the next larger geographic area or political jurisdiction should be presented to place population characteristics in context (US EPA 1998, pg. 12). This is consistent with staff's approach to identify below-poverty-level populations that constitute an EJ population.

Socioeconomics Table 3 shows poverty data for the cities of Oxnard, San Buenaventura (Ventura), and Port Hueneme, and for Ventura County. The cities are situated in the six-mile radius of the project site, while Ventura County is the reference geography.

6 Staff determined that data at the place (city) 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.

Socioeconomics Table 3
Poverty Data within the Project Area

Cities in the six-mile radius	Total	Income in the past 12 months below poverty level	Percent below poverty level (%)
	Estimate*	Estimate	Estimate
Oxnard	200,076 ±394	31,956 ±2,320	16.00 ±1.2
Port Hueneme	21,020 ±310	3,848 ±838	18.30 ±4
San Buenaventura (Ventura)	106,870 ±262	11,532 ±1,399	10.80 ±1.3
Reference geography			
Ventura County	824,329 ±959	91,912 ±3,350	11.10 ±0.4

Notes: * Population for whom poverty status is determined. Staff's analysis of the 2010 – 2014 estimates returned CV values less than 15, indicating the data is reliable. **Source:** US Census 2015b.

The cities of Oxnard and Port Hueneme have a higher percent of people living below the federal poverty level (approximately five and seven percent higher, respectively) when compared with Ventura County. Staff concludes that the below-poverty-level population in the cities of Oxnard and Port Hueneme constitutes an EJ population as defined by *Environmental Justice: Guidance Under the National Environmental Policy Act*.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHODS AND THRESHOLDS 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” (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 Guidelines, codified in California Code of Regulations section 15064(e), specify:

> "Economic and social changes resulting from the project shall not be treated as significant effects on the environment."
>
> "Where 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 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 law enforcement and parks and recreation.

Staff’s assessment of the significance of any impacts on population, housing, police protection, 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.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Induce Substantial Population Growth

Staff defines “induce substantial population growth” (for purposes of this analysis) 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 the local workforce as:

- Residing within a two-hour commute of project construction and a one-hour commute for project operation.
- Oxnard-Thousand Oaks-Ventura Metropolitan Statistical Area [7] (MSA) (Ventura County) and Los Angeles-Long Beach-Glendale Metropolitan Division (MD) (Los Angeles County)

Workers with a greater commute would likely be non-local and would tend to seek lodging closer to the project site (temporarily during construction or permanently during operations).

Socioeconomics Table 4 shows the historical and projected populations for the cities within proximity of the project site, plus Los Angeles and Ventura counties. Population projections between 2010 and 2035 show a growth of roughly 21 percent in the cities within and around the six-mile radius. The cities of Oxnard and Ventura have the highest projected growth with 24 and 21 percent, respectively.

Socioeconomics Table 4
Historical and Projected Populations

Area	2000[1]	2010[2]	2020[3]	2035[3]	Projected Population Change 2010-2035	
					Number	Percent (%)
Oxnard	170,358	197,899	216,700	244,500	46,601	23.55
Port Hueneme	21,845	21,723	22,100	22,500	777	3.58
San Buenaventura (Ventura)	100,916	106,433	116,900	128,800	22,367	21.02
Camarillo	57,077	65,201	72,200	76,700	11,499	17.64
Simi Valley	111,351	124,237	129,700	133,200	8,963	7.21
Thousand Oaks	117,005	126,683	129,700	130,900	4,217	3.33
Ventura County	753,197	823,318	889,000[3] 867,535[4]	954,000[3] 940,102[4]	130,682*	15.87
Los Angeles County	9,519,338	9,818,605	10,404,000[3] 10,441,441[4]	11,353,000[3] 11,120,284[4]	1,534,395*	15.63

Notes: * Calculated using the highest 2035 population projection. **Sources:** [1]US Census 2000, [2]US Census 2010a, [3]SCAG 2012, [4]CA DOF 2013a.

Socioeconomics Table 5 shows the project labor needs and the total labor supply in the study area, which would be more than adequate to provide the construction and demolition labor for the project. Decommissioning (not included in the table) would employ approximately nine construction workers (PPP 2015a pg. 2-29). Project operations would employ 17 workers from the current MGS operations staff.

[7] A Metropolitan Statistical Area (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.

Socioeconomics Table 5
Total Craft Labor by Skill in the Study Area MSA/MD versus Project Labor Needs

	Oxnard-Thousand Oaks-Ventura MSA (Ventura County) and Los Angeles-Long Beach-Glendale MD (Los Angeles County)				Project Labor Needs	
	Total Workforce (2012)	Total Projected Workforce (2022)	Growth from 2012		Peak Construction Period (May 2019, Month 8)	Peak Demolition Period (Jan - May 2022, Months 7 - 11)
			Number	Percent		
CRAFT STAFF						
Asbestos removal certified workers[1]	970	1,190	270	22.7		0 (12)
Asbestos removal helpers[1]	970	1,190	270	22.7		0 (6)
Boilermaker	-	-	-	-	0 (10)	8
Carpenter	19,540	24,170	4,630	23.7	12	4
Cement Finisher	2,770	3,770	1,000	36.1	6	0 (4)
Electrician	12,160	14,710	2,550	21.0	10	8
Ironworker	940	1,170	230	24.5	8	8
Laborer[2]	23,140	28,730	5,590	24.2	10	10
Millwright	-	-	-	-	8	4
Operator[3]	4,290	4,860	570	13.3	6	8
Painters and Insulators	9,590	12,810	3,220	33.6	2 (8)	10
Pipefitter	8,720	10,710	1,990	22.8	10	8
Teamster[4]	17,080	18,610	1,530	9.0	2	2
CONSTRUCTION STAFF						
Business Manager [A]	73,000	82,000	9,000	12.3	1	
Civil/Structural Engineer	7,990	9,340	1,350	16.9	1	
Civil/Structural Superintendent [B]	7,080	7,410	330	4.7	1	
Construction Manager	11,560	13,160	1,600	13.8	1	
Document Control	-	-	-	-	1	
Electrical Engineer	5,390	5,350	-40	-0.7	1	
Electrical Superintendent	-	-	-	-	1	
Field Engineering Manager	-	-	-	-	1	
Mechanical/Piping Engineer	6,580	6,570	-10	-0.2	1	
Mechanical/ Piping Superintendent	-	-	-	-	1	
Payroll Clerk	5,930	6,720	790	13.3	1	
Procurement Manager [C]	2,280	2,430	150	6.6	1	
Project Controls Manager	-	-	-	-	1	
Quality Control Manager	-	-	-	-	1	
Receiving Manager [D]	29,830	31,260	1,430	4.8	1	
Safety Manager [E]	580	580	0	0	1	
Total Craft and Construction Staff	249,420	285,550	36,130	14.5	90	74*

Notes: - No data available. ( ) The number in the parenthesis represents the peak workforce for the trade type and project phase. The number outside of the parenthesis represents the number of workers for that trade during the project's peak month for each project phase. [1] Hazardous materials removal workers, [2] Construction laborer; [3] Operating Engineer; [4] Industrial Truck and Tractor Operators. [A] General and operations managers; [B] Architectural and engineering managers; [C] Procurement clerk; [D] Shipping, receiving, and traffic clerks; [E] Health and safety engineers, except mining safety engineers and inspectors. * 4 of the 74 total craft and construction staff are identified by the applicant as construction staff and cannot be matched to a specific trade type. **Sources:** PPP 2015a, Table 2.9-1, pg. 2-53 to 2-55; PPP 2015x Pg.2-8; and CA EDD 2014.

The existing MGS power plant currently has two operating steam generating units (Units 1 and 2) and one operating gas combustion turbine unit (Unit 3). MGS Units 1 and 2 would be retired by the completion of commissioning of the new facility. Demolition of MGS Units 1 and 2 to grade is proposed as part of the project (PPP2015x, pg.4-44). Unit 3 and the new P3 unit would be the only operational units following commissioning of P3.

The majority of construction and demolition operations are expected to take place between 7:00 a.m. and 6:00 p.m. Project construction and decommissioning activities would require onsite laydown areas (approximately 4.76 acres) for the laydown and storage of materials and assembly and storage of equipment (PPP 2015a, Figure 2.9-3). Approximately 0.92 acres onsite would be used for workforce parking. Demolition activities would require approximately 1.5 acres for onsite material storage and 0.92-acre workforce parking (PPP 2015x, Figure 2-1).

The applicant expects project construction to last 21 months, from October 2018 until June 2020, with commercial operation beginning in June 2020 (PPP 2015a, pg. 2-1). Decommissioning of Units 1 and 2 would follow with completion anticipated in June 2021 and require approximately nine workers on an intermittent basis, with P3 operations staff providing oversight (PPP 2015a, pg. 2-29 and CEC 2016g). Demolition of MGS Units 1 and 2 would commence in July 2021 and be completed in September 2022 for a 15-month demolition period (PPP 2015x, pg. 4-41).The project's construction workforce would reach a peak with 90 workers in month 8 (May 2019) and have an average workforce over the 23-month period of 45 workers. The demolition workforce would peak during months 7 to 11 (Jan to May 2022) with 74 workers and have an average workforce over the 15-month period of 54 workers (PPP2015x, pg. 2-8). The peak workforce needed for the project is presented in **Socioeconomics Table 5**.

The applicant assumes that approximately 90 percent of the construction workforce and 95 percent of the demolition workforce would be drawn from Ventura and Los Angeles counties and thus would be considered local workforce, commuting daily to the project site (PPP 2015, pg. 4.10-8 and PPP 2015x, pg. 4-41). The remaining ten percent of the construction workforce and five percent of the demolition workforce would be considered non-local and likely seek lodging closer to the project site, returning to their primary residences on weekends.

During peak construction there would be 90 workers, with approximately 81 local and 9 non-local workers. During peak demolition there would be 74 workers, with approximately 71 local and 4 non-local workers. During construction, there would be an average of 45 workers, with approximately 40 local and 5 non-local workers. During demolition, there would be an average of 54 workers, with approximately 51 local and 3 non-local workers.

Energy Commission staff contacted the local building and construction trades council for more information about the local construction workforce in Ventura County. Tony Skinner with the Tri-Counties Building and Construction Trades Council (Ventura, Santa Barbara, San Luis Obispo counties) (BCTC) explained that labor supply for the P3 would not be a problem. Mr. Skinner explained that the latest economic forecast by the Economic Development Collaborative of Ventura County reported July 2015 as one of the worst months since the recession in the construction sector for Ventura County (CEC 2015t). According to BCTC staff consulted for other similar projects to the P3, there is a certain ratio of apprentices to journeyman members required for staffing a job site. With robust apprentice programs, most of which last five years, there are apprentices at all levels available for staffing for P3.

The 17 operations staff needed for P3 would be drawn from the existing MGS staff (PPP 2015a, pg. 5.10-13). There would be no new workers hired, therefore no new residents would be added and P3 would not create a substantial population influx.

Staff concludes the project's construction, decommissioning, demolition, and operations workforce 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 under this criterion.

Housing Supply

Socioeconomics Table 6 presents housing supply data for the project area. As of April 1, 2010, there were 103,730 housing units within a six-mile radius of the project site with a vacancy of 6,415 units, representing a 6.2 percent vacancy rate. Changes to population and housing stock have been updated by the California Department of Finance for 2015. Year 2015 housing estimates indicated 106,216 housing units within the six-mile radius, with a vacancy of 6,460 for a vacancy rate of 6.1 percent (CA DOF 2015). The updated data show almost a 2.5 percent increase in housing stock and a one tenth decrease in vacancy rate. A five percent vacancy is a largely industry-accepted minimum benchmark for a sufficient amount of housing available for occupancy (Virginia Tech 2006). The housing counts in the project area indicate a sufficient supply of available housing units within a six-mile radius of the project site.

Socioeconomics Table 6
Housing Supply Estimates in the Project Area

Housing Supply Occupancy Status	Area					
	Cities in a Six-Mile Radius of Project Site*		Ventura County		Los Angeles County	
	Number	Percent (%)	Number	Percent (%)	Number	Percent (%)
Total housing units	103,730	100	281,695	100	3,445,076	100
Occupied	97,315	93.8	266,920	94.8	3,241,204	94.1
Vacant	6,415	6.2	14,775	5.2	203,872	5.9
Status of Vacant Units						
For rent	2,125	33.1	4,664	31.6	104,960	51.5
For sale only	923	14.4	2,467	16.7	26,808	13.1
For seasonal, recreational, or occasional use	1,880	29.3	3,545	24	19,099	9.4
For migratory workers	2	0.0	12	0.1	109	0.1
Other**	1,485	23.1	4,087	27.7	53,005	26.0

Notes: *Cities include Oxnard, Port Hueneme, and San Buenaventura (Ventura). **Other includes rented, not occupied; sold, not occupied; and other vacant. **Source:** US Census 2010b.

The city of Oxnard had 549,590 motel/hotel rooms with a forecast occupancy rate of 66.3 percent for 2014 (PKF 2014). Ventura County had 1,650,530 rooms with a forecast occupancy rate of 69.2 for 2014. There are over 650 recreational vehicle (RV) and campground spaces spread throughout 11 RV/campground parks within the study area. (RV Parking 2014). The majority of the RV/campground parks have restrictions limiting stays to 14 consecutive days. There are a few RV/campground parks that allow extended stay.

During construction, there would be approximately nine non-local workers during peak construction and an average of five non-local workers. Decommissioning would require at most, one non-local worker on an intermittent basis. During demolition, there would be four non-local workers during peak demolition and an average of three non-local workers. Non-local workers are likely to seek lodging closer to the project site. With many lodging options to choose from, staff expects no new housing would be required as a result of the project.

There would be no new workers hired for project operation because the 17 operational staff needed would be drawn from the existing MGS staff. As a result, there would be no impacts to the housing supply.

Staff concludes the project's construction, decommissioning, demolition, and operations workforce would not have a significant adverse impact on the housing supply in the project area, Ventura or Los Angeles counties and therefore, the project would create a less than significant impact under this criterion.

Displace Substantial Numbers of Existing Housing and People

The P3 is proposed on the site of the existing MGS property. 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 P3 would not cause significant impacts to service ratios, response times, or other performance objectives relating to law enforcement or parks.

Law Enforcement

The California Highway Patrol (CHP) is the primary law enforcement agency for state highways and roads. Small segments of state highways 1, 34, and 232 are within the city of Oxnard and are served by both CHP and Oxnard Police Department (OPD). CHP services include law enforcement, traffic control, accident investigation, and the management of hazardous material spill incidents. The nearest CHP office is located in Ventura (San Buenaventura) (CHP 2015). The **Hazardous Materials Management** section of this document discusses response times for hazardous material incidents.

The P3 proposed project site is located within the jurisdiction of OPD. The department has a response goal for priority calls (emergency) of less than five minutes. The project site is within the Beat 21 patrol Division, in the District Two boundary. Beat 21 is in the northwest end of the city limits and is not patrolled on a regular basis (COO 2015i). OPD's station serving the project area is located at 251 South "C" Street, a distance of 5.2 miles from the project site (COO 2015i). OPD has 239 sworn police officers and 125 civilians with 13 sworn officers per shift with three shifts. OPD's actual service standard is 1.19 officers per 1,000 people and their desired service standard is 1.9 officers per 1,000 people. The estimated response time for priority calls (emergency) is less than 5 minutes and the estimated response time for non-priority calls (non-emergency) is 20 to 45 minutes. The project would not impact OPD's ability to maintain or meet existing service standards (COO 2015i).

Staff contacted OPD 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. Staff included an example of two conditions of certification typically applied to projects like P3 to address construction and operations site security and traffic management.

When asked if the project could trigger the need for additional law enforcement services for on-site crimes against persons, theft or materials, and/or vandalism, OPD Commander Randy Latimer expressed concerns that during construction theft of construction materials may occur due to the heavy transient population in the area, as has been OPD's experience in the past with large construction projects (COO 2015i). He recommended ensuring the existing fencing is intact and video surveillance of all access points and perimeter fencing, plus 24/7 guard services.

When asked about the possibility of increased project-related traffic during construction or operations affecting circulation and access on roads near the P3 site to the extent that an impact to emergency-response times may occur, Commander Latimer explained that Harbor Boulevard is often congested during peak traffic hours so partial or complete blockage of this two-lane road could delay emergency response during construction. Commander Latimer anticipates emergency response delays to be unlikely during project operation. Traffic and Transportation staff has proposed Condition of Certification **TRANS-1**, which would require preparation and implementation of a traffic control plan to address the movement of workers, vehicles, and materials, including arrival and departure schedules and designated workforce and delivery routes. See the **Traffic and Transportation** section of this document for a full assessment of impacts related to traffic and transportation.

Chief Jeri Williams provided additional emergency response comments about the P3 project. In the event of an incident at the project site requiring OPD response and should flooding occur above one foot, OPD would be able to respond by relying on transportation by the fire department or requesting mutual aid assistance from Ventura County, because OPD's vehicles cannot operate in floodwater above one foot in depth. In the event of a major emergency, such as an earthquake or tsunami, a request for OPD response would not be a priority compared to rescue and evacuation and other higher priorities (COO 2015i). Refer to the **Soil and Water Resources** section for discussion about coastal flooding, storm scenarios, and sea level rise. Refer to the **Geological and Paleontological Resources** section for discussion about earthquakes and tsunamis.

The applicant provided a few details about project site security. There is an existing perimeter fence surrounding the MGS facility. The applicant's construction site security plans include a guard stationed at designated gates to control access during construction, construction employee training, and work rules. Hazardous Materials Management staff is proposing Conditions of Certification **HAZ-7** and **HAZ-8**, which would require the preparation of a construction site security plan and operation security plan and include a protocol for contacting law enforcement and the Energy Commission compliance project manager (CPM) in the event of suspicious activity or emergency. See the **Hazardous Materials Management** section of this document for a full assessment of impacts related to site security.

Chief Williams requested the Energy Commission require P3 to submit security plans and fees for a security review by OPD and incorporate OPD's conditions of approval in the license, should the project be licensed. According to Hazardous Materials Management staff, the site security plans required by Conditions of Certification **HAZ-7** and **HAZ-8** are required to be designed in compliance with North American Electric Reliability Council (NERC) guidelines. NERC guidelines are sanctioned by all utilities and the federal government and are the guidelines the Energy Commission uses. For more discussion about NERC or site security, refer to the **Hazardous Materials Management** section. Based on the two recommended Hazardous Materials Management staff conditions of certification and the required project design compliance with NERC guidelines, Socioeconomics staff concludes project site security would be consistent with current power plant security standards.

Based on the feedback from Chief Williams and Commander Latimer, as discussed above, 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 a 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 on law enforcement.

Education

The California Government Code sets forth the exclusive methods of considering and mitigating impacts on school facilities. Section 65995 expressly provides that "[t]he payment or satisfaction of a fee, charge, or other requirement levied or imposed pursuant to Section 17620 of the Education Code in the amount specified in Section 65995 … are hereby deemed to be full and complete mitigation of the impacts of any legislative or adjudicative act, or both, involving but not limited to, the planning, use, or development of real property, or any change in governmental organization… on the provision of adequate school facilities."

School Impact Fees

School fees are applied to the new construction or reconstruction of existing building for industrial use (Cal. Education Code § 17620 (a) (2), Cal. Gov. Code § 65995 (d)). The fees are assessed on the area of covered and enclosed space and are calculated prior to the issuance of building permits during plan review. The project is in the Oxnard School District and Oxnard Union High School District. The rate for the 2015-2016 fiscal year for new or commercial or industrial development for the Oxnard School District is $0.356 per square foot of covered and enclosed, non-residential space (CEC 2015j). The rate for the Oxnard Union High School District is $0.54 per square foot of covered and enclosed, non-residential space (OUHSD 2015). Based on the preliminary project design, approximately 600 square feet of the existing warehouse building would be reconfigured as a control center, and the existing 6,106 square foot administration building would be upgraded and thus both subject to assessment.

Approximately $2,387.34 in school fees would be assessed for OSD and $3,621.24 for OUHSD for a combined total of $6,008.58. Staff is proposing Condition of Certification **SOCIO-1** to ensure the payment of fees to these school districts. The project would comply with Section 17620 of the Education Code through the one-time payment of statutory school impact fees to the Oxnard School District and Oxnard Union High School District.

Parks

Oxnard has 59 parks with approximately 532 acres and 14 recreational facilities (Oxnard 2011a). Park amenities include ball diamonds, basketball courts, jogging path, picnic areas, shelters and tables, playgrounds, soccer field, tennis courts, volleyball, dog parks, and horseshoes. The closest park to the project site is the Mandalay County Park. The closest park to the project site with amenities is the Oxnard Beach Park.

The city has a park standard of three acres per 1,000 residents (Oxnard 2011b). ACS five year data (2010-2014) show the estimated population in Oxnard as 201,744[8] (US Census 2015c). Based on this current estimate, approximately 605 acres of parks would be needed to meet the park standard. The city has approximately 532 acres of parks, equating to approximately 2.64 acres per 1,000 residents, so the city does not meet its park standard.

Staff's analysis shows there would not be a large number of workers moving into the project area during project construction and no workers moving to the project area for project operations, 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 objections 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 of 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, the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probably future projects [Cal. Code Regs., tit. 14, § 15065(a)(3)].

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 the projects' demand for public services do not match a local jurisdiction's ability to provide such services. An influx of non-local workers and their dependents can strain housing, parks and recreation, and law enforcement services.

Staff reviewed the P3 Master Cumulative Project List for projects that would employ a similar workforce to the P3 and have overlapping construction schedules. In assessing the P3's direct impacts, staff assumed about 10 percent of the P3 construction/demolition workforce would be non-local and seek temporary lodging closer to the project site. In assessing cumulative impacts, staff estimated the workforce for the cumulative projects would include about 10 percent non-local workers.

The applicant anticipates that if P3 is approved, the project's 21-month construction period would begin in October 2018, followed by a 2-month decommissioning and a 15-month demolition of MGS Units 1 and 2. Staff considers the following projects in **Socioeconomics Table 7** part of the cumulative setting for socioeconomic resources.

[8] The Five-Year ACS estimate for population in Oxnard is 201,744 with a margin of error of +/- 157, and a coefficient of variation of 0.05.

Socioeconomics Table 7
Cumulative Projects

ID #	PROJECT NAME	DESCRIPTION	LOCATION	STATUS
1	Beachwalk on the Mandalay Coast (formerly North Shore Subdivision)	183 single-family homes, 109 detached condos, and on-site amenities.	NE corner of W Fifth St and Harbor Blvd, Oxnard	Plan Check, dirt, gravel and rock movement. Submitted plans for off-site improvements for Harbor Boulevard. - widening, etc. No active permits pulled for houses yet.
7	Holiday Inn Express Hotel (PROJ-7630)	40-room addition to existing Holiday Inn Express & Suites Hotel, consisting of 3 stories over 23,961 sq ft.	1080 Navigator Dr, Ventura	Approved
8	Sondermann-Ring - Amendment (PROJ-6237)	300 Apartment Units and 20,292 sq ft commercial retail. Includes private indoor and outdoor recreational facilities and 2.44-acre park and waterfront promenade (3 stories).	Ventura Harbor adjacent to Anchors Way & Navigator Dr, Ventura	All planning approvals
9	Teal Club Specific Plan	990 residential units of varying density, single-family, townhomes, condominium, and apartment units; 21 ac. community park; 8 ac. school site; 60,000 sq ft mixed use and retail; 132,000 sq ft business research park; 1 ac. fire station site.	SE corner of Doris Ave and N Patterson Rd, Oxnard	Resubmitted; Draft EIR in preparation.
10	Ventura Harbor Marina and Yacht Yard Expansion	Increase number of boat slips from 40 to 80 (40 new boat slips). Expansion involves removing the existing dock structure, concrete ramps, a portion of the existing pier, and fuel docks; construction of expanded dock structure; relocation of fuel dock; onshore parking improvements; and other related facility improvements. Expanded dock would extend further into main channel of Ventura Harbor, but consistent with June 2014 Ventura Port District Commission channel limits. Parking improvements require removal of several mature palm trees and other landscape elements.	Anchors Way Dr/ Beachmont St, Oxnard	Mitigated Negative Declaration published Aug. 2015.

ID #	PROJECT NAME	DESCRIPTION	LOCATION	STATUS
17	Olivas Park Drive Extension Project	(1) Extend Olivas Park Drive as 4-lane Secondary Arterial between Golf Course Dr and Auto Center Dr; (2) construct levee/floodwall approximately 5,400 linear ft along north side of Santa Clara River that terminates 350 feet south of Southern Pacific Railroad; (3) General Plan amendments for land use changes for parcels within 139-acre project boundary, (4) Specific Plan amendment to revise boundaries of Auto Center Specific Plan; and (5) zone changes for amendment to revise boundaries of Auto Center Specific Plan; and (5) zone changes for parcels within project boundaries. Project also includes a pre-zone and annexation of one County parcel. Proposed zoning and land use amendments could accommodate maximum of 1,258,000 sq ft commercial and 75,000 sq ft industrial. Roadway extension transition to join existing improvements at Johnson Dr/U.S. 101 southbound ramps interchange. No improvements other than the transition proposed as part of this project at Johnson Dr/U.S. 101 interchange. Montalvo Community Services District (MCSD) to abandon and remove existing MCSD wastewater treatment plant components and wastewater treated at this facility diverted to city of Oxnard's wastewater facility.	Between Golf Course Dr and Johnson Dr, Ventura	LAFCO hearing Sept. 16, 2015
19	Marriott-Residence Inn (PROJ-5616)	New four-story hotel with 128 Rooms coving 87,000 sq ft.	770 S Seaward Ave, Ventura	Plan Check
21	Santa Clara River Levee Improvements Downstream of Union Pacific Railroad (SCR-3) Project	Structural improvements to existing SCR-3 levee for FEMA certification. Between Bailard Landfill and N Ventura Rd (reaches 1-3) two options considered. Option 1A (Full Levee System) adds fill material and riprap to raise existing levee (8,875 feet) with one tie-in to Bailard Landfill. Option 1B (Minimum Levee System) adds fill material along portion of existing levee (3,575 feet), with tie-ins to Bailard, Coastal, and Santa Clara Landfills. Fill in existing River Ridge Golf Course swale. Between N Ventura Rd and UPRR bridge (Reach 4), construct 950-foot long floodwall on river side of road with visible height of 6 feet; install flood gate across N Ventura Rd; and construct 4- to 6-foot floodwall south side of N Ventura Rd	N Ventura Rd, N of W Vineyard Ave, Oxnard	Unknown

ID #	PROJECT NAME	DESCRIPTION	LOCATION	STATUS
		for 860 ft.		
26	Island View Apartments-Westwood Communities (PROJ-2008)	Four-story apartment complex with 154 units.	Alameda at 8th St behind Montalvo Square, Ventura	Under construction
27	Ravello Holdings (PROJ-6811)	5-story mixed-use structure with 306 apartment units and 10,000 sq ft commercial.	Johnson Dr and Northbank Dr, Ventura	Proposed
36	Community Memorial Hospital Parking Structure	5 1/2-story parking structure with 571 parking spaces and 1,399 sq ft retail liner.	City Parking Lot, N of 29 N Brent St and S of new Community Memorial Hospital building, Ventura	Proposed
37	Wagon Wheel Development Project (PA18)	219 market rate apartments, recreation/meeting room, tot lot, and landscaped paseos. Construct commercial area (16,303 sq ft)	Wagon Wheel Rd and Winchester Dr, Oxnard	Proposed
38	Community Memorial Hospital	New hospital building adaptive reuse of existing hospital (121,000 sq ft). New street extensions, new public plaza.	S of Loma Vista Rd, W of Brent St, and N of Main St, Ventura	Under construction
40	Skyview Apartment Complex	240-unit affordable (100% affordable) housing apartment.	1250 S Oxnard Blvd, Oxnard	Proposed
41	Third Tower	15-story office tower in Esplanade Financial Square. Approx. 300,000 sq ft.	E Esplanade Dr, Oxnard	Approved
55	RiverPark: Sonata Apartments	53 apartments (3 story buildings) with garages and recreation facilities.	2905 Danvers River St, Oxnard	Under Construction
56	RiverPark: Tempo Apartments	235 apartments (3 story buildings) with garages and recreation facilities.	443 Forest Park Blvd, Oxnard	Under Construction
57	Hemlock	23 apartments.	264/274 S	In Plan Check

ID #	PROJECT NAME	DESCRIPTION	LOCATION	STATUS
	Apartments (PROJ-1126)		Hemlock St, Ventura	
59	Terraza de Las Cortes	Four 16-unit multifamily buildings with total of 64 affordable apartments, and one 1,080 sq ft community building, parking and landscaping on a 3.56 acre site.	Carmelita Ct, Oxnard	Under Construction
63	Trailer Hotel (PROJ-7213)	New 34 unit airstream trailer park.	398 S Ash St, Ventura	All planning approvals
65	Santa Clara Apartments (PROJ-6263)	Eight apartments.	1254 & 1268 E Santa Clara St, Ventura	All planning approvals
67	J Street Drain Project	Increased flow capacity of existing J Street Drain to accommodate runoff from 100-year storm event, reducing potential flooding of residential and commercial areas in cities of Oxnard and Port Hueneme.	J St and Redwood Ave to S of Hueneme Rd, Oxnard and Port Hueneme	Approved
75	Hilton - Harbor and Figueroa (PROJ-8165)	160 room hotel: 5,242 sq ft retail space, a 5,337 sq ft. restaurant, and a 1,555 sq. ft. upper roof lounge (covered area only). Total project 4-stories and 156,160 sq. ft.	SE corner Harbor & Figueroa, Ventura	Proposed
78	Ventura Downtown Housing (PROJ-5085)	5- story, 255 unit, apartment complex.	120 E Santa Clara St, Ventura	Proposed
101	Chapman, Mike (PROJ-04691)	7 apartments	95 E Ramona St, Ventura	Under Construction-Duplex constructed, 5 units pending construction
105	Westview Village (PROJ-7951)	Redevelopment of 180 public housing apartments and addition of 140 new apartments.	Between Barnett and Vince and riverside and Snow streets, Ventura	Proposed
114	Enclave at North Bank (PROJ-4184)	Vesting Tentative Map for subdivision of 12.61 acres into 84 residential lots with two open space lots. Design Review and Density Bonus Concessions for 91 residential	SE corner Saticoy Ave and N Bank	In Plan Check

ID #	PROJECT NAME	DESCRIPTION	LOCATION	STATUS
		units with 84 single-family units and 7 duplexes with adjacent park space (EIR- 5-12-10586)(EIR-2473)	Dr, Ventura	
120	Westwood/ Parklands (PROJ-03829)	216 detached homes and 110 attached homes.	SW corner Wells and Telegraph Rd, Ventura	All planning approvals
122	Parklands Apartments (PROJ-4222)	173 apartment units with community building.	SW corner Telegraph Rd and Wells Rd, Ventura	In Plan Check
123	East Village Residential (PROJ-4154)	50 low income apartments.	Snapdragon and Los Angeles Ave, Ventura	Under construction
127 not shown on map	North Pleasant Valley (NPV) Treatment Facility	Construction/operation of a groundwater treatment facility, including drilling and production of two new wells, installation of pipelines for distribution of raw well water, product water and brine. Facility would provide treated water to Camarillo's existing service area, with average design capacity of 7,500 acre feet year of production water.	Las Posas Rd/Lewis Rd, Camarillo	Unknown
128 not shown on map	East Area 1 Specific Plan Amendment	501 acres site for up to: (1) 1,500 residential dwelling units, (2) 240,000 sq. ft. commercial and light industrial, (3) 9.2 acres of civic uses for school facilities, and 225.3 acres open space and park uses.	Telegraph Rd and Padre Lane, Santa Paula	Unknown
129 not shown on map	Santa Barbara County Reliability Project	(1)Reconstruct existing 66 kV subtransmission facilities within existing and new utility rights-of-way between the existing Santa Clara Substation in Ventura County and the existing Carpinteria Substation located in the City of Carpinteria in Santa Barbara County (Segments 4 and 3B); (2) Modify subtransmission, substation, and/or telecommunications equipment within the existing Carpinteria, Casitas, Getty, Goleta, Ortega, Santa Barbara, Santa Clara, and Ventura Substations; and (3) Install fiber optic telecommunications equipment for the protection, monitoring and control of subtransmission and substation equipment along Segments 1,2, and 4 and at Carpinteria, Casitas, Santa Clara, and Ventura	City of Ventura, Ventura County to City of Carpenteria, Santa Barbara County	Final CPUC Decision November 5, 2015. Coastal development permit necessary from Santa Barbara County. Estimated 2 year construction

ID #	PROJECT NAME	DESCRIPTION	LOCATION	STATUS
		Substations.		
130 not shown on map	Moorpark Newbury 66 kV Subtransmission Line Project	New 66 kV subtransmission line and related facilities within portion of SCE's existing Moorpark-Ormond Beach 220 kV Transmission Line right-of-way (ROW) and portion of SCE's Moorpark-Newbury-Pharmacy 66 kV Subtransmission Line ROW. New subtransmission line between SCE's Moorpark Substation and Newbury Substation and construction of 1,200 ft. underground line, 5 miles new 66 kV line, 2 miles new 66 kV line within Moorpark-Newbury-Pharmacy 66 kV subtransmission line, and 1 mile new 66 kV subtransmission line into Newbury Substation.	E Los Angeles Ave, W Los Angeles Ave, and Gabbert Rd, Moorpark	Draft CPUC Decision published May 20, 2016. Final hearing June 23, 2016. Estimate July2016 permit to construct at earliest. Estimated 10-month construction.

The socioeconomic impacts of P3 are primarily driven by the construction workforce needs of the project. The P3 project would employ an average of 45 workers per month during construction and would peak during month 8 (May 2019) with 90 workers onsite. During demolition there would be an average of 54 workers employed with 74 workers during the peak months (7 to 11). The majority of the construction and demolition workforce are expected to be local workers commuting daily to the project site. Any potential project impacts from the ten percent of non-local workforce during construction (average 5, peak 9) and 5 percent of non-local workforce during demolition (average 3, peak 4) would be the result of these workers temporarily relocating closer to the project site. Temporary lodging would be sought by these non-local workers. Once operational, the P3 would permanently employ 17 workers, drawn from the existing MGS staff. No additional operations staff would be required.

The cumulative projects are at different stages of approval and construction, so the labor needed to construct them and any associated housing needed for non-local workers would be spread out over time, instead of occurring all at one time. Also as discussed previously, staff estimates that as with P3 construction, approximately 10 percent of the workforce needed for the cumulative projects would be non-local and seek lodging closer to the project sites. **Socioeconomics Table 8** presents the total labor force within Oxnard-Thousand Oaks-Ventura MSA and the Los Angeles-Long Beach-Glendale Metropolitan Division.

Socioeconomics Table 8
Table Labor Supply for Selected MSAs/MD

Total Labor for Selected MSA/MD (Construction Workforce)*	Total Workforce for 2012	Total Projected Workforce for 2022	Growth from 2012	Percent Growth from 2012 (%)
Oxnard-Thousand Oaks-Ventura MSA	21,310	25,330	4,020	18.9
Los Angeles-Long Beach-Glendale Metropolitan Division	228,110	260,220	32,110	14.1
TOTALS	249,420	285,550	36,130	14.5

Notes: Total workforce includes only the crafts specifically needed for the P3. *See **Socioeconomics Table 5** for list of crafts included in the total construction workforce figures. **Source:** CA EDD 2015.

Even if several of the cumulative projects were to have overlapping construction schedules with their peak construction activity occurring at the same time, this workforce is more than sufficient to accommodate the labor needs for these projects identified in **Socioeconomics Table 7**, including P3.

As shown in **Socioeconomics Table 7**, there are approximately 450 apartments in the cities of Oxnard and Ventura currently under construction. With an additional 500 apartments and 202 hotel/temporary lodging rooms approved for construction in these cities, this added housing would supplement the many lodging options already available. The incremental increased need for workers for P3, including the non-local workers, would not significantly impact the housing supply. The incremental increase in demand for housing would be less than significant and the P3 would not contribute to a cumulative impact on the housing supply. No additional operational workers would be

hired for the P3; therefore, the project would not have an incremental impact due to a permanent influx of workers.

Non-local construction workers who seek lodging closer to the project do not bring their families with them and generally return to their residences over the weekend. Because they are not likely to spend time at neighborhood parks and recreational facilities, the project would not affect neighborhood or regional parks or other recreational facilities. Therefore, the P3 would not have an incremental impact on neighborhood or regional parks or other facilities.

The cumulative projects would not be expected to create a significant demand on law enforcement services. The MGS is a currently operating power plant already served by OPD. As discussed previously, the project would not result in law enforcement response times being affected and would not increase the demand for law enforcement services. Thus, the project would not have and incremental impact on law enforcement services.

For the reasons discussed above, staff does not expect the construction or operation of the P3 and the decommissioning and demolition of MGS Units 1 and 2 to contribute to any significant adverse cumulative impacts on population, housing, parks and recreation, or law enforcement.

NOTEWORTHY PUBLIC BENEFITS

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. IMPLAN is an input-output model used by economists to measure the ripple effect on the local economy from the dollars spent on, or resulting from a variety of activities including development, in this case, the construction and operation of P3.

The assessment used Ventura and Los Angeles counties as the units of analysis.

Impact estimates reflect two scenarios; the decommissioning/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.

Direct economic effects represent employment, labor income, and spending associated with decommissioning, 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.

IMPLAN Model Components

- Estimates do not represent a precise forecast, but rather an approximate estimate of the overall economic effect.
- 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.
- Assumes that prices remain fixed, regardless of changes in demand, and that industry purchaser-supplier relationships operate in fixed proportions.
- Does not account for substitution effects, supply constraints, economies of scale, demographic change, or structural adjustments.

Socioeconomics Table 9 reports the applicant's estimates of the economic benefits that would accrue to the city of Oxnard, and Ventura and Los Angeles counties due to project construction and operation.

Socioeconomics Table 9
P3 Economic Benefits (2014 dollars)

TOTAL FISCAL BENEFITS Construction and Operation of P3 and Demolition of MGS Units 1 and 2	
Estimated annual property taxes	Increased by $2,841,236
State and local sales taxes:	
Construction	Based on $64.6 million in local expenditures
	$1,033,600 City of Oxnard
	$1,211,250 Ventura County
	$3,197,700 Los Angeles County
Operation	- (not a new benefit)
	-
	-
	-
Demolition	-
School Impact Fees	Estimated total: $6,008.58
	$2,387.34 for OSD
	$3,621.24 for OUHSD
TOTAL NON-FISCAL BENEFITS	
Total capital costs	$235 to $270 million (2015 dollars)
Construction payroll (incl. benefits)	$15 to $17 million
Operations payroll (incl. benefits)	$2.3 million annually (not a new benefit)
Demolition payroll (incl. benefits)	$9.1 million
Construction materials and supplies	$179 million
Operations and maintenance supplies	$8.6 million first year of operation (not a new benefit)
Demolition materials and supplies	$3.8 million
TOTAL DIRECT, INDIRECT, AND INDUCED BENEFITS	
Estimated Direct Benefits	
Construction Jobs	48 (average), 90 (peak)
Operation Jobs	0 new jobs (17 from existing MGS workforce)
Demolition Jobs	54 (average), 74 (peak)
Estimated Indirect Benefits	
Construction Jobs	115
Construction Income	$7,196,314
Operation Jobs	- (not a new benefit)
Operation Income	- (not a new benefit)
Demolition Jobs	16
Demolition Income	$980,000
Estimated Induced Benefits	
Construction Jobs	84
Construction Income	$4,201,590
Operation Jobs	- (not a new benefit)
Operation Income	- (not a new benefit)
Demolition Jobs	56
Demolition Income	$2.8 million

Note: [1] Based on applicant's estimates. – Data not provided. **Sources:** CEC 2015b; PPP 2015a, pgs. 1-3, 4.10-7 to 4.10-11, and 4.10-29; and PPP 2015x, pgs. 4-41 and 4-42.

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 (MWs) or greater. For a power-generating facility producing less than 50 MW, the county has jurisdiction of the valuation. The P3 would have an electrical generating output range from 241 net MWs to a peak of 271 net MWs. Therefore, BOE is responsible for assessing property value. The property tax rate is set by the Ventura County Auditor-Controller's office. Property taxes are collected and distributed at the county level.

Construction of the power plant would add approximately $232.5 million in improvements. With a property tax rate consistent with the current rate for the existing MGS site (1.1222037 percent), the project would generate $2,841,236 in property taxes during the first operation year of the project (CEC 2015K, PPP 2015a, pg. 4.10-9). The revenue collected from property taxes is distributed among school districts, special districts, redevelopment agencies, unincorporated areas, and incorporated areas (cities) by Ventura County. The remaining property tax generated above 1 percent (0.1222037 percent) is distributed in whole to the city.

CONCLUSIONS

Staff concludes P3 would not cause a significant adverse socioeconomic impact as a result of the construction or operation of the proposed project, or contribute to any significant cumulative socioeconomic impacts, for the following reasons:

1. The project's construction, decommissioning, operation, and demolition workforce would not directly or indirectly induce a substantial population growth in the project area.

2. The project's construction, decommissioning, operation, and demolition workforce would not have a significant 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 significant physical impacts associated with the provision of new of physically altered government facilities in order to maintain acceptable service ratios, response times, or other performance objectives with respect to law enforcement services, or parks and recreation.

4. The project would have less than significant adverse direct, indirect, and cumulative socioeconomic impacts; therefore, the project would have less than significant socioeconomic impacts on any population within a six-mile radius of the P3, including the EJ population represented in **Socioeconomics Figure 1** and **Table 3**.

PROPOSED CONDITIONS OF CERTIFICATION

SOCIO-1 The project owner shall pay the one-time statutory school facility development fee to the Oxnard School District and to the Oxnard 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 Oxnard School District and to the Oxnard Union High School District of the statutory development fees.

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SOIL & WATER RESOURCES

Marylou Taylor, P.E.

SUMMARY OF CONCLUSIONS

The proposed Puente Power Project (P3) could potentially impact soil and water resources. Staff compared P3 to the existing setting (baseline conditions) and evaluated the potential for P3 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, standards (LORS), and state policies. Staff also discusses the present and future flood risks in terms of the severity of consequences from flood hazards.

Using significance criteria based on California Environmental Quality Act (CEQA) Guidelines, staff concludes that the project would not result in significant adverse impacts that cannot be avoided or mitigated. The following table summarizes staff conclusions related to each potential impact to soil and water resource issue analyzed.

Impact Analysis	P3 Construction	P3 Operation	MGS Decommissioning and Demolition
Soil Erosion and Storm Water Control	Less than significant (Page 4.10-21)	Less than significant (Page 4.10-25)	Less than significant (Page 4.10-60)
Groundwater Quality and Supply	Less than significant (Page 4.10-22)	Less than significant (Page 4.10-27)	Less than significant (Page 4.10-62)
Surface Water Quality	Same as Storm Water Control	Less than significant (Page 4.10-26)	Less than significant (Page 4.10-62)
Regional Water Supply	Less than significant (Page 4.10-24)	Less than significant (Page 4.10-27)	Less than significant (Page 4.10-68)
Wastewater Management	Less than significant (Page 4.10-24)	Less than significant (Page 4.10-27)	Less than significant (Page 4.10-61)
Flooding	Same as Storm Water Control	Onsite (Page 4.10-29): Less than significant Offsite (Page 4.10-29): Less than significant Page	Same as Storm Water Control

Staff also concludes that P3 would not result in the indirect impact of inducing population growth in the vicinity, and P3's incremental effects on regional water supply or the quality of surface water and groundwater would not be cumulatively considerable.

Relative flood risk was determined by estimating the likelihood of a flood impacting the proposed P3 and evaluating the consequences resulting from those flood impacts. Staff's preliminary evaluation suggests that present-day flood risks are low, based on flood hazard maps issued by the Federal Emergency Management Agency's (FEMA). FEMA's comprehensive study of Pacific Coast flood hazards is in development and is considered to be the best information available. Staff will review FEMA's updated information, expected summer 2016, to refine the analysis for the Final Staff Assessment. Staff's sea level rise analysis follows the State of California Sea-Level

Rise Guidance Document issued by the Coastal and Ocean Working Group of the California Climate Action Team (CO-CAT) and the Sea Level Rise Policy Guidance adopted by the California Coastal Commission (CCC). Staff's preliminary evaluation suggests that future flood risks for P3 could be between low and medium, based on flood hazard maps developed by USGS using the Coastal Storm Modeling System (CoSMoS 3.0).

Hazard	Risk Assessment	Page
Riverine Flooding	Low	4.10-33
Coastal Flooding	Low	4.10-34
Levee Failure	Low	4.10-38
Dam Failure	Low	4.10-38
Sediment Deficiency to Beaches	Low	4.10-39
Climate Change – Riverine Flooding	Low to Medium	4.10-47
Climate Change – Coastal Flooding	Project Lifespan: Low Permanent Closure: Zero	4.10-49

Socioeconomics staff has determined that the population in the six-mile project radius constitutes an environmental justice population as described by the Council on Environmental Quality, in its guidance document for agencies to address these issues under the National Environmental Policy Act. Staff analyzed P3's potential effects of water quality impacts and flooding risks on environmental justice populations. Staff concludes that P3 would not individually or cumulatively contribute to disproportionate flooding impacts and that mitigated water quality impacts would not disproportionately affect EJ populations.

Staff also concludes that the project would comply with federal, state, and local LORS with implementation of conditions of certification recommended by staff. Conclusions are listed on page 4.10-83 followed by proposed conditions of certification. The list of acronyms and references are at the end of this section.

This **Soil & Water Resources** analysis also includes information to provide readers with background and technical material.

- **Response to Comments** (page 4.10-79) received into the docket or at workshops are included to address specific topics and help readers find information in this section.
- **Appendix SW-1: Climate Change and P3 Coastal Flooding** discusses several issues of contention in detail and explains how staff determined whether information is relevant and appropriate. The issues are:
  - Sea Level Rise Guidance
  - Critical Infrastructure
  - Coastal Dependency
  - Planning Horizon
  - Hazard vs. Risk
  - Flood Prediction Models
  - Erosion Potential of Dunes
  - Hazard Zone Mapping
  - FEMA Hazard Map Update

- **Appendix SW-2: The California ISO, P3, and Grid Reliability** discusses staff's position regarding the effect of P3 outages on grid reliability.
- **Appendix SW-3: Estimating Flush Times** is the technical material that describes how staff compares marine harbor flush rates with and without flows induced by once-through cooling of MGS Units 1 and 2. This information is part of the impact analysis of MGS decommissioning on water quality of the Edison Canal and Channel Islands Harbor.

INTRODUCTION

On May 15, 2015, NRG Oxnard Energy Center LLC (applicant) filed an application for certification (AFC) to construct and operate the 262-megawatt (MW) Puente Power Project (P3). The AFC also proposes to decommission and demolish the existing Mandalay Generating Station (MGS) Units 1 and 2 located adjacent to the P3 site. This Preliminary Staff Assessment (PSA) analyzes potential impacts on soil and water resources through the construction and operation of P3. Environmental effects of the decommissioning and demolition of MGS are considered with respect to the potential that these activities change the scope or nature of the environmental impacts of the P3 facility. Where the potential of P3 to result in a significant impact is identified, staff proposes mitigation to reduce the significance of the impact and, as appropriate, recommends conditions of certification.

METHODOLOGY FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

Significance criteria are based on those listed in Appendix G of the California Environmental Quality Act (CEQA) Guidelines. Soil and water resources impacts would be significant if the project would:

- violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality;
- substantially decrease 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;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
    - result in substantial erosion or siltation on- or off-site;
    - substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
    - 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; or
    - impede or redirect flood flows

- adversely impact open space used for production of resources by, among other things:
    - substantially impeding groundwater recharge;
    - causing substantial soil erosion or the loss of topsoil;
    - areas required for the protection of water quality and water supply
- require or result in the construction of new or expanded water, wastewater treatment, or storm water drainage facilities, the construction of which could cause significant environmental effects;
- have insufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years;
- result in a determination by the wastewater treatment provider that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments;
- have impacts that are individually limited, but cumulatively considerable ("cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects); or
- have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly.

Although the CEQA Guidelines provide a checklist of suggested issues that should be addressed in an environmental document, neither the CEQA statute nor the CEQA guidelines prescribe thresholds of significance or particular methodologies for performing an impact analysis. This is left to lead agency judgment and discretion, based on factual data and guidance from regulatory agencies and other sources where available and applicable. Staff assessed whether there would be a significant impact under the CEQA. Where a potentially significant impact was identified, staff proposed mitigation to ensure the impacts would be less than significant.

While CEQA does not require an environmental assessment to analyze the impact of existing environmental conditions on a proposed project's future users or residents,[1] Public Resources Code section 25001 indicates the importance of state government, through the Energy Commission, to ensure a reliable supply of electrical energy while maintaining environmental quality protection.[2] The **Power Plant Reliability** section of this PSA analyzes how the P3 facility is designed, sited, and operated in order to ensure its safe and reliable operation. This **Soil & Water Resources** section discusses relative flood risk in terms of the likelihood of a flood causing operational failure of the proposed P3 facility and the severity of consequences to safety of people onsite and electric grid reliability (local or system wide).

[1] Unless expressly required by certain CEQA provisions (e.g. airport, school, and housing projects).

[2] Staff notes that the evaluation of electric grid reliability is the joint responsibility of the Energy Commission, California Public Utilities Commission (CPUC), and California Independent Systems Operator (CAISO).

In additional to an environmental impact analysis, staff assessed whether the project would comply with the federal, state, and local environmental LORS described in **Soil & Water Resources Table 1**. These LORS intended to protect human health and the environment were established to ensure the best and appropriate use and management of both soil and water resources. A major component of staff's determination regarding significance is the project's compliance with these requirements applicable to the use and management of soil and water resources.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Soil & Water Resources Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable LORS	Description
Federal	
Clean Water Act (33 USC, §1251 et seq.)	The primary objective of the Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of the Nation's surface waters. CWA Section 401: Requires certification that the proposed project is in compliance with established water quality standards. CWA Section 402: Direct and indirect discharges and storm water discharges into waters of the U.S. must be made pursuant to a National Pollutant Discharge Elimination System (NPDES) permit.
Resource Conservation and Recovery Act (40 CFR, part 260 et seq.)	Seeks to prevent surface and groundwater contamination, sets guidelines for determining hazardous wastes, and identifies proper methods for handling and disposing of those wastes.
State	
California Constitution, article X, section 2	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 is prohibited.
Porter-Cologne Water Quality Control Act California Water Code, section 13000 et seq.	The State Water Resources Control Board (SWRCB) has the ultimate authority over state water rights and water quality policy. Porter-Cologne also establishes nine Regional Water Quality Control Boards (RWQCB) to oversee water quality on a day-to-day basis at the local/regional level. Section 13260: Requires filing with the SWRCB or appropriate RWQCB a report of waste discharge for any discharge that could affect the water quality of the state. Section 13550: Requires the use of recycled water for non-potable uses subject to recycled water being available and upon other criteria such as 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.
California Water Code, sections 10910-10915	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.

Applicable LORS	Description
Title 20, California Code of Regulations, sections 1301-1313	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.
Local	
City of Oxnard 2030 General Plan	The City of Oxnard General Plan Land Use Element, adopted October 2011, sets out a vision to guide future development in the city through 2030. Policies include: SC-2.3 Sea Level Rise Consideration in Decision-Making ER-3.4 Reduce Impact on Harbor, Bay, and Ocean Water Ecology ER-3.5 Reduce Construction Silt and Sediment ER-5.1 Wastewater Treatment ER-5.7 Minimizing Paved Surfaces SH-3.2 New Development Flood Mitigation
City of Oxnard Code of Ordinances	The Oxnard Zoning Ordinance establishes all of the regulatory, penal and administrative laws of general application within the city. Chapter 18: Floodplain Management – to minimize public and private losses due to flood conditions through provisions that restrict, regulate, and impose requirements in specific areas of special flood hazard. Chapter 22: Water – includes articles that promote water conservation, recycled water use, and storm water quality management.
City of Oxnard Water Neutral Policy	All new developments approved within the city of Oxnard must offset the water demand associated with the project with a supplemental water supply.

PROPOSED PROJECT

Construction of the project consists of four sequential phases:

- site preparation, construction, and commissioning of P3;
- operation of P3;
- shutdown and decommissioning MGS Units 1 and 2; and
- demolition of MGS Units 1 and 2.

Site preparation and construction of P3 is estimated to take approximately 21 months. When and if the completed power plant is commissioned and operational, the shutdown and decommissioning of MGS Units 1 and 2 would occur, which is scheduled to occur from June 2020 to August 2020. Therefore, decommissioning and demolition of MGS Units 1 and 2 would follow P3 completed construction, but would be concurrent with P3 operations.

Refer to the **Project Description** section of this PSA for more information on major features of the proposed project. **Project Description Figures 2** and **4** show the location of P3 with respect to MGS. Information relevant to the soil and water resources analysis is summarized below. For a complete detailed description of the proposed project, refer to the AFC (PPP 2015a) and the applicant's related supplemental material.

SETTING AND EXISTING CONDITIONS

The project site is located in the city of Oxnard of Ventura County, along the shore of the Pacific Ocean and just south of McGrath Lake State Park. The area is primarily characterized by agricultural and open space uses among the western dunes on the Oxnard Plain. The P3 site would be located on approximately three acres on the northwest portion of the existing 36-acre MGS property. Laydown and parking areas used during construction would be located within the MGS property (PPP2015a §2.4). A more complete description of P3, including the site layout, linear facilities, and regional maps, can be reviewed in the **Project Description** section of this PSA.

SURFACE WATER FEATURES

Pacific Coast

The P3 site is adjacent to sand dunes along the coast of the Pacific Ocean, located between the mouth of the Santa Clara River (two miles north of the site) and the entrance to Channel Islands Harbor (four miles south of the site). The center of the city of Oxnard is approximately four miles to the east. The regional hydrologic setting is presented in **Soil & Water Resources Figure 1**.

The Los Angeles Regional Water Quality Control Board (LARWQCB), which regulates water quality protection for almost all of Ventura County and most of Los Angeles County, identifies the watershed containing the P3 site as coastal drainage area (see **Soil & Water Resources Figure 2**). Within this separate Watershed Management Area (WMA), beneficial uses are designated for Edison Canal Estuary, Channel Islands Harbor (and the adjacent Mandalay Bay marina), McGrath Lake, and the Pacific Ocean (see **Soil & Water Resources Table 2**). The beneficial uses, together with water quality objectives, form the water quality standards mandated by LARWQCB to protect these resources (LARWQCB 2009).

SOIL & WATER RESOURCES - FIGURE 1

Puente Power Project – Regional Hydrologic Setting

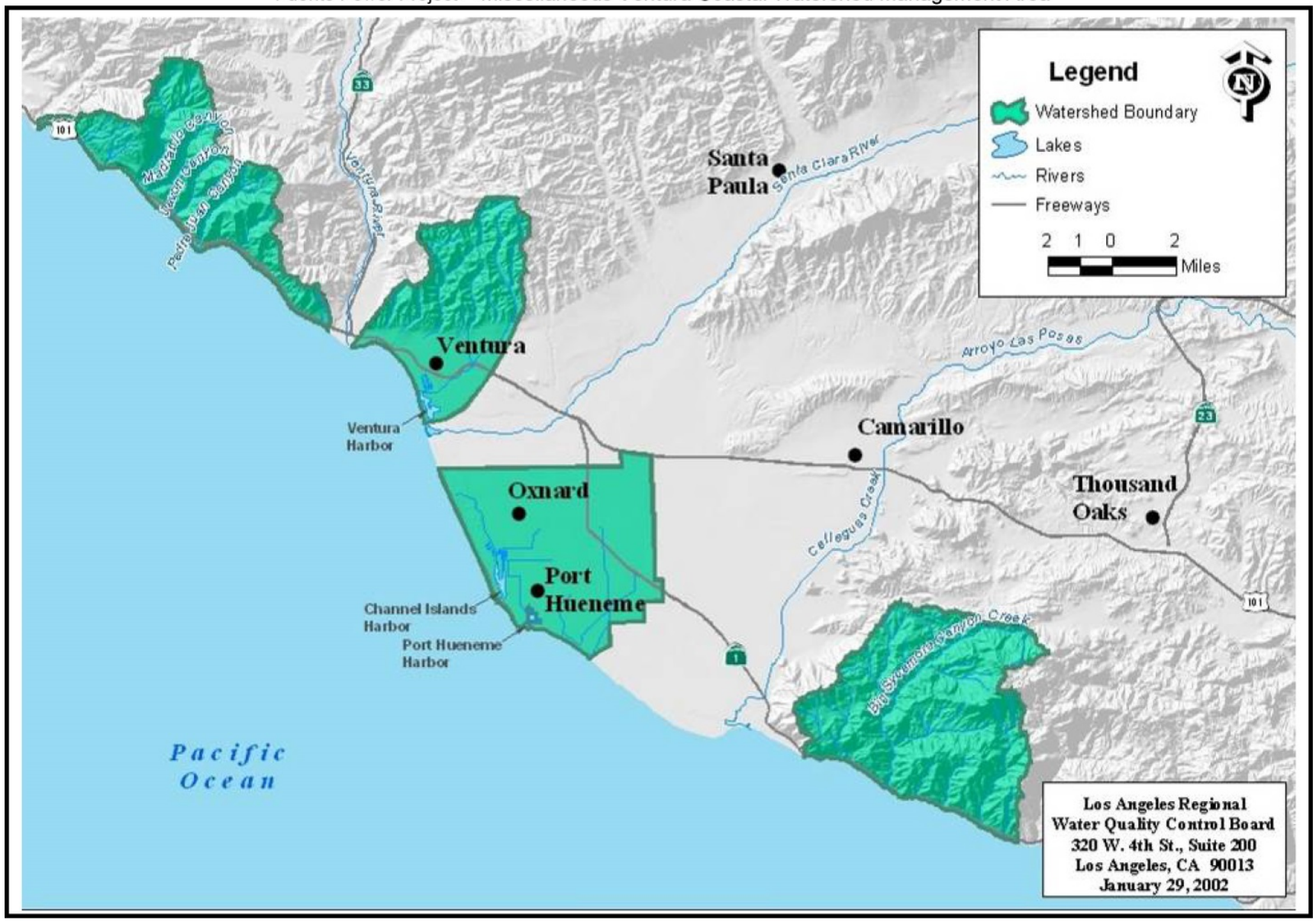


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: PPP 2015a §4.15

SOIL & WATER RESOURCES - FIGURE 2

Puente Power Project – Miscellaneous Ventura Coastal Watershed Management Area



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Los Angeles Regional Water Quality Control Board, 2002

Soil & Water Resources Table 2
Beneficial Uses of Nearby Water Bodies

Beneficial Uses	McGrath Lake	Edison Canal	Mandalay Bay (marina)	Channel Islands Harbor	Pacific Ocean (nearshore)
Industrial Service Supply (IND)		X	X	X	X
Navigation (NAV)			X	X	X
Commercial and Sport Fishing (COM)				X	X
Estuarine Habitat (EST)	X				
Marine Habitat (MAR)		X	X	X	X
Wildlife Habitat (WILD)	X	X	X	X	X
Rare, Threatened, or Endangered Species (RARE)	X	X			X
Wetland Habitat (WET)	X				
Water Contact Recreation (REC-1)	X[1]	X	X	X	X
Non-contact Water Recreation (REC-2)	X[1]	X	X	X	X
Preservation of Biological Habitats (BIOL)					X
Migration of Aquatic Organisms (MIGR)					X
Spawning / Reproduction /Early Development (SPWN)					X
Shellfish Harvesting (SHELL)					X

(Source: LARWQCB 2009) Note 1: Limited public access precludes full utilization.

Edison Canal

The Edison Canal is located south of the P3 site and within the MGS property. The existing MGS facility withdraws ocean water from this man-made, 2.5-mile canal for industrial cooling then discharges the cooling water to the Pacific Ocean through a concrete-and-rock revetted structure immediately offshore of the facility. In addition to providing once-through cooling water to MGS Units 1 and 2, the Edison Canal also services MGS Unit 3, a 130 MW simple-cycle combustion turbine unit. Although Unit 3 does not create steam, water is pumped from the Edison Canal to supply bearing cooling water to the combustion turbine cooling water heat exchanger whenever Unit 3 is in operation. An emergency diesel powered firewater pump draws supply water from the Edison Canal as well (LARWQCB 2015).

Ocean water enters the Edison Canal from the Channel Islands Harbor located further south. The Harbor caters primarily to recreational uses, occupying 310 acres of land

and water and accommodating approximately 2,150 vessels with a specific number of slips reserved for commercial fishing vessels. Other harbor features include restaurants, a linear park, retail businesses, residential and hotel development, and commercial businesses providing services for boaters (COO 2002). Over the years, the residential development referred to as Mandalay Bay has expanded the marina north of the harbor. Occupying roughly 400 acres of land and water, this residential community features waterfront dock homes accessible to the coast through the Channel Island Harbor.

The Edison Canal terminates at the MGS intake structure with no direct connection to the Pacific Ocean. Near the MGS intake, the canal dimensions are approximately ten feet deep and 40 to 100 feet wide (PPP 2015c). When all circulating water pumps are in operation, the once-through cooling water system has a combined pumping capacity of approximately 255 million gallons per day. When Unit 3 is in operation, a single 3,200 gallon per minute low capacity saltwater pump provides bearing cooling water to the combustion turbine. After MGS makes use of the water pumped from the Edison Canal, the facility combines the spent once-through cooling water from Units 1 and 2, together with storm water runoff and process wastewaters from all three units and discharged to a single outfall. The concrete- and rock-vetted discharge structure on Mandalay Beach west of the facility site is a shallow water discharge to the Pacific Ocean (LARWQCB 2015).

McGrath Lake

Approximately 500 feet north of the P3 site is McGrath Lake, which is a 10-acre, brackish lake located at the southern end of McGrath State Beach Park. Prior to agricultural development within the region, the lake and surrounding area was historically part of the extensive wetland and floodplain complex of the Santa Clara River Delta. Tile drains were installed in much of the watershed upstream of the lake to drain perched water from shallow soil zones which allowed for extensive agricultural operations. The “Central Ditch” conveys storm water and agricultural drainage directly to McGrath Lake from approximately 730 acres of nearby land (LARWQCB 2009).

Because the lake has no natural surface outlet, contaminants remain in the lake and ultimately settle to the bottom. In particular, PCBs and organochlorine (OC) pesticides detected in both water and sediment samples led LARWQCB to identify these constituents of concern as impairments of McGrath Lake. Although PCBs and OC pesticides were banned many years ago, they persist in the environment and continue to cause water quality impairments. They easily bind to sediments and particulate organic matter that are transported with runoff through the Central Ditch to McGrath Lake, where high sediment toxicity and extended residence time may result in some release of contaminants to the water (LARWQCB 2009). McGrath Lake is upgradient of the MGS site (WPK 2007).

Santa Clara River

Approximately two miles north of the P3 site is the Santa Clara River. It is approximately 85 miles in length, stretching between the northern slope of the San Gabriel Mountains in Los Angeles County and the Pacific Ocean on the coast of Ventura County. The watershed of the Santa Clara River is approximately 1,600 square miles and contains surface-water storage reservoirs and dams including the Santa Felicia Dam at Piru

Reservoir, the Pyramid Lake Dam, and the Castaic Lake Dam. While dams and reservoirs help control downstream flows of tributaries feeding into the river, they only regulate 34 percent of the watershed. Flows in the Santa Clara River can vary dramatically, often exhibiting very low flow in dry periods that increase exponentially during winter storm events. In the rainy season (November through March), river flows rapidly peak then subside depending on the intensity of rainfall events (WCVC 2014).

The mouth of the Santa Clara River is a dynamic environment. Hydrologic conditions frequently change due to natural variations in watershed flow, discharge of treated effluent and irrigation return water, and ocean tides. Constant wave action in addition to sediment drift results in the gradual formation of a sandbar across the mouth of the river. When river flow is low, the sandbar completely blocks direct river outflow and forms an embayment between the river mouth and Harbor Boulevard. The berm is mechanically breached on occasion by State Park employees or farm maintenance people to prevent flooding of McGrath State Park or upriver agricultural lands. If river flow is high, which can occur during or immediately after storms, a natural breach occurs when the water level in the embayment rises faster than the sandbar can build up (CPR 1979).

The P3 site is located south of the Santa Clara River WMA, but the area has historically experienced flooding from the Santa Clara River. Prior to agricultural development within the region, the dune system at the time was much broader and prevented flows of Santa Clara River floodwaters from reaching the ocean. This created an extensive suite of marsh, salt flats, and lagoons stretched from south of the Santa Clara River to the present-day Point Mugu Naval Air Station (SCC 2011). Although urban development and agriculture operations have since eliminated these lagoons, these low-laying areas can potentially flood during extreme flood events.

GROUNDWATER

The project site is in the western portion of the Oxnard Plain groundwater basin in the unconfined and perched aquifers hydrologic sub-area in the Santa Clara Hydrological Area of the Ventura Hydrologic Unit. The Oxnard Plains groundwater basin extends several miles offshore beneath the marine shelf, where the outer edges are in direct contact with seawater (PPP 2015a §4.15.1.4). Since the late 1800s, a steady increase in groundwater demand in Ventura County for farming and urban uses has resulted in groundwater overdraft conditions. Aquifers within the Oxnard Plain have experienced groundwater storage reductions and groundwater levels that have declined below sea level, resulting in water quality degradation from sea water intrusion and ground subsidence (CH2M 2004 §2.6).

Depth to groundwater underlying the MGS property ranges from approximately 5 to 9 feet below ground surface (bgs). Groundwater is monitored as part of ongoing subsurface investigations regarding past operations by Southern California Edison (SCE), the previous owners of MGS (see “Soil Contamination” discussion below). Metals (arsenic, chromium, nickel, and vanadium) exceeding the groundwater regulatory maximum contaminant level values have been detected in groundwater samples from several wells. A plume of nickel and vanadium exists down gradient from the basins in a 15-foot thick saturated zone (PPP 2015a §4.15.1.4). As a result, a Land

Use Covenant will reportedly be put in place, restricting the use of groundwater pumped from the MGS site (AEC 2015a).

SOIL FEATURES

The coastal area between the Santa Clara River and Port Hueneme Harbor consists of the Oxnard Plain, a broad and low-lying alluvial plain. The shoreline is mostly a long and wide sandy coast, historically backed by dunes (BEA 2009). The P3 site is located on the western edge of the Oxnard Plain, bordered by sand dunes and a wide, sandy beach to the west (PPP 2015a §4.11.1). The MGS property occupies approximately 1,800 feet of ocean frontage. The Natural Resources Conservation Service maps the location of the P3 and MGS sites as Coastal Beaches. A preliminary geotechnical evaluation performed in November 2013 found that the P3 site is predominantly underlain by sand and silty sand sediments, with some interbedded sandy silt and clay (N&M 2013).

SOIL CONTAMINATION

The three-acre P3 site was originally graded in the 1950s during construction of MGS and installation of the 30 inch-diameter line to supply natural gas. This brownfield land has remained vacant, other than occasional use to temporarily store dredged material from the Edison Canal. In 2011, this land was used for temporary storage of contaminated soil for SCE's retention basin remediation project. The existing retention basins on the MGS property were historically used to temporarily store boiler chemical cleaning wastewater for offsite treatment and disposal. This method of boiler cleaning stopped in 1986, but subsequent testing of soil and groundwater samples indicated subsurface contamination (PPP 2015a §4.11.2). Although SCE sold the MGS facility in 1998, SCE retains responsibility for environmental liability associated with past operation of the retention basins during its ownership. SCE developed plans to remove the contaminated soil and treat the groundwater to acceptable levels. Under the guidance and direction of California Department of Toxic Substances Control (DTSC), SCE continues to implement its approved remediation plan to "clean close" the retention basin area[3] (WPK 2007).

LOCAL WATER SUPPLIES AND WASTEWATER SERVICE

The city of Oxnard owns and operates its own municipal water supply system, which relies on local groundwater and imported water supplies. Groundwater is obtained from city wells or purchased from the United Water Conservation District (UWCD). Imported water is purchased from the Calleguas Municipal Water District (CMWD), which obtains the water from the State Water Project. The city's water system includes five blending stations where imported water is blended with local groundwater to achieve an appropriate balance between water quality, quantity, and cost (COO 2011 §1.7). From 2006 to 2010, the blend ratio of imported surface water and groundwater (from either UWCD or city wells) has varied between 1:1 and 1:2 (KJC 2012).

[3] *Clean closure* refers to the level of site remediation that meets closure performance standards for "unrestricted land use". Note that SCE will not physically close the retention basins, which are necessary for continued operation of MGS. The basins will remain in operation and unaffected after the site is remediated and approved by DTSC.

The city provides wastewater collection and treatment services through the Public Works Wastewater Division. The Oxnard Wastewater Treatment Plant (OWWTP), located in southwest Oxnard, serves the cities of Oxnard and Port Hueneme, Naval Base Ventura County, and some adjacent unincorporated areas. The city owns, operates, and maintains over 425 miles of sewer pipeline and 15 wastewater lift stations. Three additional pumping stations owned and operated by other entities also discharge to the city's wastewater system. The OWWTP has an average design capacity of 31.7 million gallons per day (mgd) with average daily flows of approximately 24 mgd, and the potential for expansion to 39.7 mgd (COO 2011 §1.7).

The city typically discharges effluent from its wastewater treatment plant (treated to secondary standards) directly to a permitted deep ocean outfall. Implementation of the city's Groundwater Recovery Enhancement and Treatment (GREAT) Program, now allows for higher beneficial uses of the wastewater by producing recycled water from the city's Advanced Water Purification Facility (AWPF). Through the GREAT Program, recycled water can offset potable water used for irrigation or groundwater used for agricultural activities. Recycled water can also be used for groundwater injection to fight ongoing overdraft and seawater intrusion[4] into the Oxnard Plain Basin (CH2M 2004 §2.4.4). The AWPF, which began operating on a small scale in April 2015, provides recycled water to the city's golf courses. The city is also pushing to convert irrigation systems from groundwater to recycled water at agricultural sites located along the city's Recycled Water Backbone System. In March 2016, recycled water became available to agricultural users primarily in the southern Oxnard Plain. The AWPF's initial capacity is 7,000 acre-feet per year (afy) with potential to increase supply to over 28,000 afy (Rincon 2015).

PROJECT DESCRIPTION

P3 FACILITY CONSTRUCTION

Construction of P3 is expected to occur over a 21-month period (from October 2018 through June 2020). The facility would occupy approximately three acres of land, consisting of a combustion gas turbine connected to an electric generator and equipped with an emissions control system and other auxiliary systems. Construction activities would include site preparation, grading, excavations for foundations, pile driving, and construction of the new facility.

Approximately 5.6 acres in the MGS will be used for construction laydown, offices, and parking. Approximately 0.9 acre of the 5.6 acres is currently paved. All construction parking and laydown areas are previously disturbed, and graded, compacted, or paved for existing industrial uses (PPP 2015a §4.11.3.2).

The P3 site is generally flat, but some grading would be required to provide a level area for the project. Surficial soils would be excavated and re-compacted or replaced with

[4] *Overdraft* is a non-sustainable condition of a groundwater basin that occurs when the amount of water withdrawn exceeds the amount of water that recharges the basin over a period of years. Seawater intrusion occurs when saltwater is drawn toward the freshwater zones of an aquifer.

materials from the P3 site or larger adjacent MGS site. Preliminary grading plans show a need for 1,000 cubic yards (cu-yd) of fill and a cut of 12,400 cu-yd, resulting in a net cut of 11,400 cu-yd. The 11,400 cu-yd of net cut is planned to be removed from site, and would be reused, recycled, or sent for disposal (PPP 2015a §4.11.3.2).

The P3 site is currently undeveloped. There would be minimal demolition (removal of fuel oil pipeline and various piping) during construction. New pipelines would be constructed using open-trench methods. The trenches are expected to be no greater than four feet deep. Soil would be removed from the trench and used as backfill. Excess soil and disposal from utilities trenching is expected to be minimal. All the areas designated for pipeline construction are previously disturbed industrial areas of the MGS property (PPP 2015a §4.11.3.2).

Soil Erosion and Storm Water Control

During construction of the project, best management practices (BMPs)[5] would be implemented to reduce erosion and prevent silt from being discharged off site. Dust erosion control measures would be used to minimize the windblown erosion of soil from the project site. Clean water would be sprayed on the soil in construction areas to suppress dust. Sediment barriers, such as straw bales or silt fences, would be placed to slow runoff and trap sediment. Sediment barriers would be placed around sensitive areas (such as the Edison Canal) to prevent contamination by sediment-laden water. Barriers would be placed around the site boundary to prevent sediment from leaving the site. Because the project site is relatively level, the applicant expects standard surface erosion control techniques to be effective (PPP 2015a §4.11.5).

Water Use

The AFC identified the following construction activities that would use water: dust suppression, compaction, and hydrostatic testing[6]. The estimated total amount of potable water to be used during the 21-month construction period is approximately 3.3 acre-feet (ac-ft). The average use would be approximately 51,500 gallons per month (0.16 ac-ft), peaking for five months at 75,000 gallons (0.23 ac-ft) for hydrostatic testing and flushing (PPP 2015a Table 2.9-4)[7]. The source of water would be potable water provided by the city of Oxnard, delivered via an existing water line and connection on the MGS property (PPP 2015a §4.15.2.4).

[5] Storm water and soil erosion BMPs are methods that have been determined to be the most effective, practical means of preventing or reducing pollution from nonpoint sources. BMPs can be classified as "structural" (i.e., devices installed or constructed on a site) or "non-structural" (procedures, such as modified landscaping practices). There are a variety of BMPs available, depending on pollutant removal capabilities.

[6] A *hydrostatic test* is a way in which leaks can be found in pressure vessels such as pipelines and plumbing. The test involves placing water, which is often dyed for visibility, in the pipe or vessel at the required pressure to ensure that it will not leak or be damaged.

[7] Staff found calculation errors in the AFC's table of construction water requirements (PPP 2015a Table 2.9-4). Assuming the values shown for each month is correct, the total amount of water used during construction is 1,085,000 gallons (3.3 ac-ft), the average monthly water use is approximately 51,500 gallons, and the average daily use is approximately 1,700 gallons.

Wastewater Management

Wastewater generated during construction would include sanitary waste, storm water runoff, equipment wash down water, concrete washout wastewater, and wastewater from hydrostatic testing. If groundwater is encountered during excavations, water would be collected from dewatering[8] activities (PPP 2015c). Construction-related wastewater would be classified as hazardous or nonhazardous then managed according to appropriate LORS. Hazardous wastewater would be collected by a licensed hazardous waste hauler for disposal at a licensed hazardous waste facility (PPP 2015a §4.14.2.2). Sanitary wastewater would be handled by portable chemical toilets, and hydrostatic testing water would be discharged in accordance with the LARWQCB's requirements for discharges of low-threat hydrostatic test waters (PPP 2015a §4.15.2).

P3 FACILITY OPERATION

Soil Erosion and Storm Water Control

The proposed P3 site would consist of about one acre of impervious area (paved roads, paved parking areas, and built structures) with the remaining two acres covered with gravel. BMPs would be implemented to reduce erosion and prevent silt from being discharged offsite. Storm water that does not infiltrate the P3 site would be collected by a new storm water drainage system and pumped either to the service water tank or to existing storm drains. Storm water that could potentially be exposed to pollutants, such as oils and greases, would be directed to a new oil-water separator. The MGS has an existing storm water collection system that consists of storm water collection pipes, sump pumps, an oil-water-separator, and the North and South Basins. Both basins drain to an existing weir chamber then to the Pacific Ocean via the existing outfall structure. Only during periods of prolonged high runoff is the storm water discharge routed directly to the ocean. Using the current scheme of storm water draining, the basins combined storage capacity can accommodate the one- and two-year storm for the existing MGS and the P3 area (PPP 2015a Appendix A-7).

Water Use and Supply

The process water and potable water supply for P3, an estimated annual water use of less than 20 afy total, would be water from the city of Oxnard through existing MGS potable water supply. The facility would require approximately three afy of potable water for personnel consumption, eyewash stations, showers, and sanitary needs (PPP 2015a §2.7).

Maximum industrial water use would be approximately 16 afy for combustion turbine inlet air evaporative cooler makeup, service water, and water for combustion turbine washes. Because P3 would be a dry-cooled facility and use dry low-NO_X burners, water would not be necessary for these purposes. The largest user of service water is the evaporative cooler, which is not necessary for operation, and would only be used to

[8] *Construction dewatering* is the action of removing groundwater or surface water from a construction site. For foundation excavations, dewatering is typically used to remove groundwater seepage from the bottom of an excavation, increase stability of excavation slopes, and/or improve soil conditions for supporting the structure.

increase performance when ambient temperature is above an appropriate level (PPP 2015a §2.7.5.1).

The project includes backup water storage. Service water would be stored onsite in an existing 445,000-gallon service-water tank that has sufficient capacity for 102 hours of operation at full-load peak demand. In the event of an outage of the water treatment system, each of the two demineralized-water storage tanks provides sufficient capacity for approximately 96 hours of peak-load operation (PPP 2015a §4.15.5.3.7).

Depending on availability, P3 storm water may be reclaimed and stored in the existing service-water tank, which would offset a corresponding amount of potable water usage. A system would be installed to provide the ability to reuse storm water collected from the new P3 project area to the service-water tank. Excess storm water would discharge to the existing North and South basins (PPP 2015a §A-6.3.4).

The two existing MGS firewater pumps and tank (lower portion of the service-water tank) would be retained and firewater loop would be extended to service P3. The primary fire pump would be connected to the new P3 switchgear and backed up by a new emergency diesel generator. The other would be the emergency backup fire pump, connected to MGS Unit 3 switchgear (PPP 2015a §2.5). For more information about the fire water system, see the **Worker Safety & Fire Protection** section of this PSA.

Wastewater Management

General Facility Drainage

MGS currently manages storm water discharges in compliance with the discharge prohibitions, effluent limitations, and receiving water limitations specified in the Waste Discharge Requirements (WDR) issued by LARWQCB (Order No. R4-2015-0201, NPDES No. CA0001180) and the MGS Storm Water Pollution Prevention Plan (SWPPP) by implementing appropriate BMPs.

A new storm water conveyance system would direct storm water runoff from the P3 site to either the service water tank for reuse or the existing North and South basins for disposal.[9] The combined maximum storage capacity of the basins, with no freeboard, is approximately 2.5 ac-ft. Wastewater is eventually discharged through the existing outfall to the Pacific Ocean (PPP 2015a §2.7).

Storm water that could potentially be exposed to pollutants, such as oils and greases, would be directed to a new oil-water separator (OWS) system. Although oil leakage from equipment is expected to be minimal, all equipment that has potential for leakage of oil or hazardous chemicals would be situated in spill containment areas. The oil from the oil containment chambers of the OWS would be collected and shipped off site for recycling. After passing through the OWS, water from the clear effluent chambers would

[9] There is a third basin, a former boiler chemical cleaning waste basin (East Basin), that is out of service and no longer in use. The basin has no outlet and currently collects and evaporates rainwater (AEC 2015a).

be discharged to the existing wastewater sump and conveyed to the North and South basins (PPP 2015a §2.7).

Process Wastewater

MGS currently does not separate process wastewater from storm water runoff. P3's process wastewater would consist of softener-regeneration waste, reverse-osmosis concentrate, evaporative-cooler blowdown[10], condensation drains from the intercoolers, and OWS effluent. Process wastewater would be stored in one of the MGS existing basins, and ultimately discharged with storm water runoff to the ocean via the existing outfall (PPP 2015a §2.7).

With the retirement of MGS Units 1 and 2, process wastewater from these units would no longer be discharged into the retention basins. The North and South basins would be reused to handle storm water and process wastewater from P3 and MGS Unit 3. Up to about 400,000 gallons of rain water per year (depending upon precipitation pattern) could be collected and used as service water and irrigation water to reduce the amount of potable water used by P3 (PPP 2015a §2.7).

Sanitary Wastewater

The P3 site is in the portion of the city of Oxnard that is not serviced by the city's wastewater system (PPP 2015a §4.15.1.7). P3 would use MGS's existing sanitary sewer collection system. The system collects discharge from sinks, toilets, and other sanitary facilities for treatment and disposal in septic tanks and leach field. The applicant states that no modifications to the existing septic system are anticipated, because the amount of domestic water used and sanitary wastewater generated is expected to be approximately the same as current operations (PPP 2015a §2.7.6.1). The septic system is operated in accordance with the WDRs issued by LARWQCB (Order No. R4-2008-0087, File No. CI-8561) (PPP 2015a §4.15.1.7).

MGS DECOMMISSIONING

MGS Units 1 and 2 are scheduled to be decommissioned by December 31, 2020. If P3 is approved, its completion and commissioning is expected to occur around the same time. As a result, the applicant proposes to use much of MGS's existing supporting facilities for P3, including the administration building, warehouse building, retention basins, and septic system. Decommissioning activities are expected to take three months. For a complete list of existing MGS facilities to be repurposed for P3, refer to the **Project Description** section of this PSA.

[10] *Blowdown* is the portion of water drained from a process to remove mineral build-up from concentrated recirculating water. These minerals would cause scaling on equipment surfaces and can damage the system.

Soil Erosion and Storm Water Control

Decommissioning would not involve removal of structures, excavation of underground infrastructure, or substantial soil disturbance activities. The laydown and staging areas used during P3 construction would continue to be used during decommissioning as needed (PPP 2015c).

Water Use

Minimal water use is expected during decommissioning. The decommissioning activities that would use water include dust suppression and domestic water use. There will be a minimal amount of equipment wash-down required. The total monthly water use would be approximately 33,000 gallons per month (3,000 gallons for domestic water use and 30,000 gallons for dismantling and dust suppression). Over the three-month decommissioning period, total water use would be approximately 99,000 gallons, or approximately 0.3 ac-ft. The source of water for decommissioning would be potable water provided by the city of Oxnard, delivered via an existing water line and connection on the MGS property (PPP 2015c).

Wastewater Management

Wastewater generated during decommissioning would include sanitary waste, storm water runoff, and liquid wastes. These wastewaters would be classified as hazardous or nonhazardous. If hazardous, they would be collected by a licensed hazardous waste hauler for disposal at a licensed hazardous waste facility. Domestic wastewater generated during the three-month decommissioning period would be handled by portable toilet facilities and/or by existing bathroom facilities in the administration building. Wastewater from the administration building would be discharged to the existing MGS septic system that would continue to be used during P3 operations (PPP 2015c). Although MGS Units 1 and 2 would no longer discharge process wastewater to the retention basins after decommissioning, the basins would be reused to handle storm water and process wastewater from P3 and MGS Unit 3 as well as storm water from the area associated with MGS Units 1 and 2 (PPP 2015a §2.7).

MGS DEMOLITION

The applicant proposes to demolish all above-grade structures associated with MGS Units 1 and 2 following their retirement and decommissioning. Asbestos abatement and above-grade demolition work for MGS Units 1 and 2 is anticipated to take approximately 15 months following completion of decommissioning, and would be completed by late 2022 (PPP 2015y §1.4).

The demolition area is approximately 3.5 acres, which consists of the existing MGS Unit 1 and 2 structures and adjacent paved area. All construction laydown and parking areas would be within the existing MGS site, and are the same areas that are proposed for use during construction of P3. Some structures and equipment would be removed first to provide working areas for remaining demolition equipment and activities. It is also expected that other areas of the property, including laydown areas used for P3 construction, would be identified as temporary storage areas for scrap, recycle, and/or offsite disposal to various end users, and staging during demolition (PPP 2015y §2.2).

Soil Erosion and Storm Water Control

Demolition of MGS Units 1 and 2 would include demolishing the structures to grade, meaning removal of aboveground equipment and structural elements. No excavation to remove foundations or underground piping would be required and below-grade spaces would be filled with crushed concrete. Similar to the construction of P3, the applicant would develop a SWPPP and implement BMPs during demolition activities (PPP 2015y §4.11.2).

Water Use

Demolition activities would require water for dust control, equipment wash-down, and concrete preparation (to fill belowground spaces). The source of water would be potable water provided by the city of Oxnard, delivered via an existing water line and connection on the MGS property. The estimated total amount of potable water to be used during the 15-month demolition period, including domestic use, is approximately 3.2 ac-ft. The average use would be approximately 69,600 gallons per month (0.21 ac-ft), peaking for three months at about 102,000 gallons (0.31 ac-ft) during removal of boiler plant equipment and structures (PPP 2015y §4.15.2 and Table 2-5).

Wastewater Management

Wastewater generated during demolition would include sanitary waste, storm water runoff, equipment wash-down water, and concrete washout wastewater. Sanitary wastewater would be handled by portable chemical toilets. Storm water runoff would be collected via existing storm water drains and conveyed to the North and South basins (PPP 2015y §4.15.2 and Table 2-1). Storm water that could potentially be exposed to pollutants, such as oils and greases, would be directed to an OWS system (PPP 2015a §2.7).

Demolition-related wastewater would be classified as hazardous or nonhazardous then managed according to appropriate LORS. Hazardous wastewater would be collected by a licensed hazardous waste hauler for disposal at a licensed hazardous waste facility (PPP 2015a §4.14.2.2).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

This subsection provides an evaluation of the expected direct, indirect, and cumulative impacts on soil and water resources that could be caused by the construction and operation of P3, including the decommissioning and demolition of MGS. Staff's analysis consists of a description of the potentially significant impacts, gathering data related to construction and operation of the project, then reaching a conclusion to determine whether the project presents potentially significant impacts. If staff determines there is a significant impact, then the applicant's proposed mitigation is evaluated for sufficiency. 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 impacts to a level that is less than significant.

Potential impacts include the project's effect on soil erosion, surface water quality, surface water hydrology, groundwater quality, water supplies, and flooding.

P3 CONSTRUCTION

Soil Erosion and Storm Water Control

Water quality can be affected by sedimentation caused by erosion, by runoff carrying contaminants, and by direct discharge of pollutants (point-source pollution). Soil erosion can occur during construction and grading activities when disturbed soil is exposed and most vulnerable to detachment by wind and water. Increased sedimentation, over and above the amount that enters the water system by natural erosion, can cause many adverse impacts on aquatic organisms, water supply, and wetlands. Contamination of a nearby water body can occur from wastewater that is directly discharged (point-source) or storm water runoff that has been in contact with toxic materials or surfaces (contact runoff)[11]. Contaminants and toxic substances can also attach to sediments and travel in sediment-laden water flows.

The proposed project is subject to construction-related storm water permit requirements of the federal Clean Water Act's National Pollutant Discharge Elimination System (NPDES) permit. In California, these NPDES requirements are typically met through California's *General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities* (Construction General Permit) administered by the California State Water Resources Control Board (SWRCB). Prior to any ground-disturbing construction activity, the applicant must obtain a Construction General Permit, which includes preparation of a Storm Water Pollution Prevention Plan (SWPPP).

The applicant submitted a Draft SWPPP for Construction (PPP 2015a Appendix A-8) that was developed based on site-specific features and construction activities. It identifies potential pollutants and preliminarily identifies the BMPs that would be implemented to protect storm water quality and to prevent or minimize soil erosion during P3 construction. The Draft SWPPP also describes procedures for BMP inspection and maintenance, as well as details of the site's Construction Site Monitoring Program. Six categories of BMPs are anticipated for construction activities:

- Erosion Control - protects the soil surface and prevents soil particles from being detached by rainfall, flowing water, or wind (e.g. soil binders).
- Sediment Control - traps soil particles after they have been detached and moved by rain, flowing water, or wind (e.g. silt fences, fiber rolls).
- Tracking Control - minimizes the amount of dirt, mud, or dust that is generated, and can thus be tracked or blown off the site (e.g. stabilized construction entrance/exit).
- Wind Erosion Control - reduces dust generated from disturbed soil surfaces (e.g. water sprinkled for dust suppression, cover soil stockpiles).

[11] *Contact runoff* in this analysis refers to storm water in contact with exposed polluted or toxic materials and/or surfaces that can potentially result in contaminated runoff (containing trace oil, chemicals, metal, toxic substances, or other pollutants).

- Non-storm Water Management – housekeeping and procedural practices to minimize or eliminate the discharge of potential pollutants (e.g. vehicle and equipment maintenance, pile driving operations, concrete curing).
- Waste Management - properly manages and disposes of construction site waste to reduce the risk of pollution from materials (e.g. spill prevention and control, hazardous waste management, solid waste management).

After review of the Draft SWPPP, staff agrees that the proposed BMPs during construction would minimize impacts on water quality. Compliance with the Construction General Permit requires implementation of specific BMPs as well as numeric action levels (NALs) to achieve minimum water quality standards[12]. Because P3 construction activities would be subject to storm water regulatory requirements and the applicant would obtain a Construction General Permit, the impacts of P3 construction on surface water quality would be **less than significant**.

Because the Construction General Permit stems from federal regulations of the Clean Water Act, it is not within the purview of the Energy Commission's authority. Staff recommends Condition of Certification **SOIL&WATER-1** to inform the Chief Building Official (CBO) of construction site BMP implementation and to notify the Compliance Project Manager (CPM) of issues regarding the Construction General Permit.[13]

Groundwater

Construction activities can potentially impact both groundwater quantity and quality. Temporary pumping could lower the groundwater level at the pumping site (drawdown) which could potentially reduce the well yield of any nearby wells, reduce required supply for nearby groundwater-dependent habitat, and induce intrusion of subsurface contaminants or seawater. Additional water quality impacts could occur if construction activities allow contaminants to reach groundwater, either directly (when excavation reaches groundwater level) or through soil infiltration.

As described in the AFC, the applicant does not expect P3 construction activities to impact groundwater for the following reasons (PPP 2015a §4.15.2):

- Compliance with the Construction General Permit would minimize or eliminate pollutant spills that could potentially infiltrate to groundwater.
- Wastewater would be managed according to appropriate LORS, which minimizes or eliminates water quality impacts on groundwater.
- Groundwater would not be used to supply construction activities, which eliminates impacts caused by the installation or operation of a production well. Furthermore, no public water supply wells are within one mile of the MGS property, and the one private supply well in the area is over 1000 feet away.

[12] Technology-based NALs are numeric benchmark values for certain parameters (pH and turbidity) that, if exceeded in effluent sampling, trigger the discharger to take actions. The purpose of NALS is to assist dischargers in evaluating the effectiveness of their BMPs.

[13] More information about the roles and responsibilities of the CBO and CPM can be found in the **Compliance Conditions and Compliance Monitoring Plan** section of this PSA.

- The likelihood of encountering groundwater during project construction is low (maximum depth of excavation would be approximately seven feet for the foundation of the power block). Dewatering, if required, would likely occur for a short duration. The collected water would be discharged to holding tanks, tested, and then reused or discharged to the existing MGS basins. In addition, no excavations are expected to encounter contaminated groundwater associated with SCE's remediation project.[14]

While staff generally agrees, concerns remain regarding potential groundwater impacts despite the low likelihood of dewatering. The applicant was requested to provide additional information that describes proposed dewatering activities assuming a conservative groundwater depth of seven feet bgs, including: pumping effects (radius of influence and drawdown); potential impacts on any nearby groundwater-dependent habitat; and proposed measures to ensure contaminated groundwater would not be present in discharges (CEC 2015i).

The applicant's supplemental information (PPP 2015c) indicates that if dewatering is required to construct the power block foundation, the approach would be to install shoring around the construction area and install dewatering sumps within the shored area. Compared to a traditional well point dewatering system, the proposed shored dewatering sump approach reduces the radius of influence; reduces the initial volume of groundwater pumped to achieve the desired soil conditions; and reduces the overall volume of water pumped during the dewatering process.

Assuming the groundwater depth during construction activities is seven feet bgs, dewatering would take approximately 90 days. For the proposed shored dewatering sump design, the estimated water withdrawal rate would be approximately 0.3 million gallons per day. The radius of influence would be constrained by the shored area, which therefore, would not extend beyond the MGS property line. By comparison, if only well point dewatering is used, then 10 to 20 well points would be needed to lower the groundwater table approximately two feet. The estimated water withdrawal rate would be approximately 2.22 million gallons per day, and the radius of influence is conservatively estimated to be on the order of 360 feet (PPP 2015c).

Although forested/shrub wetlands are located at Mandalay State Beach, McGrath Lake, and the habitat restoration area adjacent to the northern side of the MGS property[15], groundwater beneath the proposed project site is not a source of water for these wetland areas. Based on data from 47 groundwater monitoring wells associated with SCE's remediation project, quarterly monitoring results from approximately 20 years indicate the groundwater gradient is generally to the south or south-southeast across the proposed P3 site. Because the groundwater beneath these wetland areas are upgradient from the proposed P3 site, dewatering activities are unlikely to have an

[14] SCE's remediation project is discussed in "Soil Contamination" above.

[15] These forested/shrub wetlands are mapped in the U.S. Fish and Wildlife Service's National Wetlands Inventory. For detailed discussion about P3 impacts on wetlands and critical habitats, see the **Biological Resources** section of this PSA.

effect on the availability of groundwater to these wetlands or decrease the amount of groundwater flowing into the wetlands (PPP 2015c).

Staff agrees that the proposed shored dewatering sump design would not cause offsite groundwater impacts because the pumping rate would be relatively low and the drawdown would not extend beyond the MGS property line. The applicant states that actual shoring installation arrangement and the size and number of sumps would be developed during the detailed design phase of P3 and that the plan would be flexible to allow for field adjustment. Staff recommends Condition of Certification **SOIL&WATER-3** requiring review and approval of the dewatering plan prior to excavation of the power block foundation. With implementation of this condition of certification, in addition to requirements to ensure any contaminated groundwater collected during dewatering would be properly disposed (described further in "P3 Construction - Wastewater Management" below), the impacts of P3 construction on groundwater quality and quantity would be **less than significant**.

Water Supply

The source of water for P3 construction activities would be potable water provided by the city of Oxnard, delivered via an existing water line and connection on the MGS property. Over the 21-month construction period, the estimated total amount of water use would be 3.3 ac-ft, averaging approximately 0.16 ac-ft per month. For the maximum 12-month period, the estimated amount of water to be used for construction is approximately 2.2 ac-ft (PPP 2015a §4.15.2.4).

Although this amount of water use is individually minor, when added with concurrent water use during other phases of the proposed project, it could potentially impact potable water supplies. Staff's evaluation of these potential impacts analyzes water use from all phases of the proposed project in the "Cumulative Impacts" subsection below (see the "Water Supply" discussion on page 4.10-70).

Wastewater Management

Wastewater generated during construction would include sanitary waste, storm water runoff, equipment wash-down water, concrete-washout wastewater, and wastewater from hydrostatic testing. If groundwater is encountered during excavations, water would be collected from dewatering activities. Wastewater that is not properly disposed could potentially contaminate groundwater through soil infiltration, as well as a nearby water body through direct discharge or contact runoff.

The applicant states that all construction-related wastewater would be managed according to appropriate LORS. Hazardous wastewater would be collected by a licensed hazardous waste hauler for disposal at a licensed hazardous waste facility (PPP 2015a §4.14.2.2). Compliance with the Construction General Permit would implement BMPs to properly manage storm water runoff, equipment wash-down water, concrete-washout wastewater, and sanitary waste (PPP 2015a Appendix A-8). Compliance with other NPDES permits adopted by LARWQCB would specifically regulate discharges of hydrostatic test waters and construction dewatering:

- NPDES Permit No. CAG674001: *Discharges of Low Threat Hydrostatic Test Water to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties*.

- NPDES Permit No. CAG994004: *Discharges of Groundwater from Construction and Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties.*

These permits specify discharge prohibitions, effluent limitations, and monitoring and reporting requirements to show that minimum water quality standards are achieved. Because P3 construction wastewater discharges would be subject to federal regulatory requirements and the applicant would obtain the appropriate NPDES permit, the impacts of P3 construction wastewater discharges on soil and water resources would be **less than significant**.

Staff recommends Conditions of Certification **SOIL&WATER-1** and **SOIL&WATER-2** to inform the CBO of NPDES permit implementation and to notify the CPM of issues regarding these permits. Additional Conditions of Certification in the **Waste Management** section of this PSA would require reports of hazardous wastewater disposal in accordance with all applicable federal, state, and local requirements.

P3 OPERATION

Soil Erosion and Dune Impacts

Onsite soil erosion can potentially impact surface water quality by increasing the amount of sediment that enters the water system by natural erosion. The P3 site would consist of paved roads, paved parking areas, and graveled areas to reduce erosion and prevent silt from being discharged off site. Post-construction BMPs would reduce soil erosion impacts during operations to **less than significant**.

Coastal sand dunes usually begin to form when windblown sand collects in areas landward of the beach that allows the sand to accumulate (e.g. around small objects such as driftwood). Once formed, the low hills of loose sand are colonized by salt-tolerant, pioneer plants that both increase the resistance of the surface layer of sand to wind erosion and reduce the wind speeds over the surface. The incipient dunes or foredunes will continue growing, unless they are destroyed by wave action at high tide levels. As an incipient foredune builds up, and out, sand inundation and salt spray levels decrease, while nutrient levels and vegetation cover increase, resulting in more stable dunes (SLOSS 2012). Dunes can become quite large, some adjacent to the MGS property are over 20 feet tall, but they take years to form and are extremely fragile.

Dune formations are dynamic in nature, migrating and reforming, depending on wind strength and direction, wave patterns, and coastal topography. The natural processes that impact the beach/dune system are episodic, with periods of little or no change followed by times of intense activity, most obviously during storms when dunes could erode rapidly. The subsequent re-building of the dunes by wind action allows the system to recover, but natural restoration of heavily damaged dunes can take years[16]. Dunes protect low-lying coastal areas from flooding and act as a buffer against erosion.

[16] Assuming a sufficient supply of sediment is available to replace the sand lost during the storm. For further discussion on sediment supply, see “Hazard – Sediment Deficiency to Beaches” in the “P3 Operation” subsection on page 4.10-34.

They form a reservoir of sand, replenished when beach levels are high and released to nourish the foreshore during storm erosion. They also provide critical habitat for a number of coastal plant and animal species.

In additional to natural processes, damage to dunes can result from human activities impacting dune vegetation such as excessive trampling, driving vehicles over dunes, the removal of sand for urban development, excessive extraction of ground water, and allowing excessive grazing by farm animals. When small areas of sand are no longer stabilized with vegetation, erosional notches and hollows can eventually grow to become large blowouts. At exposed sites, even a few people occasionally walking across a foredune may disturb the vegetation sufficiently to increase wind erosion and initiate blowouts (SLOSS 2012).

Activities during P3 operation would not cause a direct or indirect adverse physical change to any sand dunes. The P3 footprint, in addition to areas for construction laydown and parking, are located on previously disturbed, and graded, compacted, or paved areas for existing industrial uses. No traffic or other physical disturbance of dunes surrounding the site will be required for project construction and operation. For these reasons, the impacts of P3 on sand dunes located both onsite and offsite would be **less than significant**.

Surface Water Quality

Water quality can be affected by sedimentation caused by erosion, by runoff carrying contaminants, and by direct discharge of pollutants (point-source pollution). As land is developed, the new impervious surfaces can send an increased volume of runoff containing oils, heavy metals, and other contaminants (non-point source pollution) into adjacent water bodies.

A new oil/water separation system for P3 would collect the oily water from the equipment wash-downs, leakage, sample drains, and miscellaneous plant drains. All equipment that has the potential for oil leaks (including new transformers) or hazardous chemicals would be kept in the spill containment areas. Storm water from the areas that may accumulate small amounts of oil and chemicals would be collected in a system of floor drains, equipment drains, curbed area drains, and sumps. After passing through the oil/water separator, water from the clear effluent chambers would be discharged to the existing wastewater sump via the existing oily waste network. The oil from the oil containment chambers of the oil/water separator would be collected and shipped off the site for recycling (PPP 2015a Appendix A-2).

There is no direct storm water runoff from the MGS property to McGrath Lake or to the Edison Canal. Storm water discharge from MGS to the ocean is controlled by drainage features, sumps, and basins that convey facility storm water to the existing MGS outfall structure. Discharges into the ocean are made in compliance with MGS' existing NPDES permit for discharge to the ocean.[17] This permit specifies discharge prohibitions, effluent limitations, and monitoring and reporting requirements to show that

[17] LARWQCB Order No. R4-2015-0201: Waste Discharge Requirements for the NRG California South LP Mandalay Generating Station.

minimum water quality standards are achieved. Staff recommends Condition of Certification **SOIL&WATER-4** to ensure compliance with applicable NPDES permits and to inform the CPM of issues regarding this wastewater discharge.

Furthermore, Condition of Certification **WORKER SAFETY-2** would require a Hazardous Materials Management Program, and Condition of Certification **WASTE-8** would require an Operation Waste Management Plan. Both documents would be developed by the applicant to address handling, transportation, tracking, usage, storage, emergency response, spill control and prevention, training, record keeping, and reporting of hazardous wastes on the site. Other conditions of certification in the **Waste Management** section of this PSA address wastes, including cleanup of all spills of hazardous substances. With implementation of these conditions of certification and compliance with the NPDES permit, impacts from polluted runoff would be avoided or reduced to **less than significant** during operation of the proposed project.

Groundwater

Operation of P3 would not include any groundwater pumping, so the project would not cause groundwater drawdown nor induce intrusion of subsurface contaminants or seawater. However, groundwater quality impacts could occur if operation allows contaminants to reach groundwater through soil infiltration.

The same measures implemented to avoid or reduce impacts to polluted runoff (see "Surface Water Quality" above) would also protect groundwater quality. Wastewater generated during operation would be managed to reduce impacts to groundwater (see "Wastewater Management" below). Furthermore, all three retention basins onsite are lined to prevent infiltration. For these reasons, the impacts of P3 operation on groundwater quality would be **less than significant**.

Water Supply

The process water and domestic water supply for P3, an estimated maximum annual water use of 19 afy, would be water from the city of Oxnard through the existing MGS potable water supply. Although this amount of water use is individually minor, when added with concurrent water use during other phases of the proposed project, it could potentially impact potable water supplies. Staff's evaluation of these potential impacts analyzes water use from all phases of the proposed project in the "Cumulative Impacts" subsection (see the "Water Supply" discussion on page 4.10-70).

Wastewater Management

Wastewater generated during operation would include sanitary waste, storm water runoff, and process wastewater. If wastewater is not properly disposed, then contamination could potentially occur to a nearby water body or groundwater could become contaminated through soil infiltration.

P3 wastewater would be managed by the existing MGS facilities, as previously described (see "Wastewater Management" in the Facility Operation subsection on page 4.10-17). Both the existing MGS collection system (for process wastewater and storm

water) and the existing MGS septic system are currently operating under project-specific Waste Discharge Requirements (WDRs) permits[18]. These permits specify discharge prohibitions, effluent limitations, and monitoring and reporting requirements to show that minimum water quality standards are achieved. Because discharges of storm water runoff, process wastewater, and septic waste are regulated under WDR permits, the impacts of wastewater on soil and water resources would be **less than significant**. Staff recommends Condition of Certification **SOIL&WATER-4** to inform the CPM of issues regarding these wastewater discharges.

Flooding

Flooding is an overflow of water onto land that is normally dry. Staff analyzed potential flooding of the project site that might occur from:

- construction that substantially alters the existing drainage patterns of the site (due to site grading, increasing impervious surfaces, or placing the project in a location that would alter the course of a stream or river);
- riverine flooding caused by rapid accumulation of storm water runoff in a watershed;
- failure of regional floodplain management (such as failure of a dam or levee);
- coastal flooding due to tidal waters and/or offshore storms; and
- tsunamis and seiches caused by geological events (see the **Geology and Paleontology** section of this PSA).

Staff notes CEQA's explicit distinction between significant effects of a project on the environment and significant effects of the environment on a project.[19] While CEQA only requires an agency to consider the impacts of the proposed project on the environment, commission staff also considers general impacts to grid reliability, which may entail assessing site-specific vulnerabilities. Impacts to reliability can potentially result from flooding due to river overtopping, coastal offshore storms, dam failure, and levee failure.[20] Applicability of preexisting hazards is based on the P3's proposed location in relation to a delineated hazard area in authoritative hazard maps. Staff does not propose mitigation regarding these hazards in this impact analysis, but instead assesses the flood risks.[21]

Relative flood risk was determined by estimating the likelihood of a flood impacting the proposed P3 and evaluating the consequences resulting from those flood impacts. For purposes of this section, the likelihood of impacts is based on hazard maps, and the

[18] LARWQCB Order No. R-4-2008-0087 (for the onsite sewage treatment system) and Order No.R4-2015-0201 (for the discharge of once-through cooling water, metal cleaning wastes, low volume wastes, and storm water).

[19] *California Building Industry Association v. Bay Area Air Quality Management District*, Case No. S213478 (Cal. Supreme Court, December 17, 2015)

[20] Discussion of tsunamis, seiches, and other flooding caused by seismic events and submarine landslides can be found in the **Geology and Paleontology** section of this PSA.

[21] Staff explains determination of risk in the "Hazard vs. Risk" discussion of **Appendix SW-1**.

consequences are evaluated with respect to the severity of flood impacts to safety of people onsite and electric grid reliability (local or system wide).[22]

Onsite Flooding Impacts

The existing topography of the proposed site is bare soil and relatively flat (see **Project Description Figure 3**). Due to perimeter berms and sand dunes, the MGS site does not experience run-on from offsite areas. After construction of P3, approximately one acre would be covered by impervious surfaces (e.g., the new facility and pavement). The addition of impervious surfaces to an area previously undeveloped does not allow storm water to infiltrate into the ground. Storm water runoff quickly concentrates and could potentially cause flooding due to the volume and velocity of accumulated water. Large areas of pavement could result in onsite flooding causing damage to equipment and structures.

Preliminary drainage calculations indicate that the existing onsite basins have adequate capacity to handle post-construction storm water runoff (PPP 2015a Appendix A-8). Because the onsite storm water collection system would adequately manage the increase of impervious area, onsite flooding impacts due to construction or operation of P3 are **less than significant**.

Offsite Flooding Impacts

A project could potentially cause offsite flooding impacts by:

- allowing onsite storm water to flow offsite;
- changing the course or capacity of a stream or river;
- exacerbating flood damage to offsite areas during a flood event; or
- accidentally releasing contamination or toxic substances during a flood event.

As discussed above, the onsite storm water collection system would adequately manage the increase of impervious area and prevent storm water runoff from impacting adjacent properties. The location of the P3 site would not impact the course of a stream or river, making this impact not applicable to this project.

The entire MGS property is fairly flat. The north section of the MGS property, where the P3 site is located, is roughly two feet higher in elevation compared to the south side. **Soil & Water Resources Figure 3** shows the existing land uses in the area surrounding the site. With the exception to the sand dunes to the west, elevation of the P3 site is somewhat higher than the other surrounding properties. Therefore, if the vicinity were to become inundated from flood hazards (discussed below), location of the P3 site would not cause the depth or velocity of these floods to increase. In other words, P3 would not exacerbate flood damage to offsite areas.

[22] The **Power Plant Reliability** section of this PSA analyzes how the P3 facility is designed, sited, and operated in order to ensure its safe and reliable operation.

SOIL & WATER RESOURCES - FIGURE 3

Puente Power Project – Existing Land Uses in the Area Surrounding the Site



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: PPP 2015a Figure 4.6-2, 2015

The accidental release of contamination or toxic substances during a flood event is prevented or minimized by implementing a Hazardous Materials Management Program (discussed in the **Worker Safety & Fire Protection** section) and Operation Waste Management Plan (discussed in the **Waste Management** section). Handling of toxic and hazardous substances must follow strict management regulations, including secure storage with secondary containment. Hazardous waste must also be managed in accordance with regulations for onsite storage followed by proper offsite disposal based on the amounts collected and time of storage on site. Implementation of these and similar procedures would protect the environment and the safety of workers onsite during normal operating conditions. Should a flood event occur, these BMPs would reduce or limit the impact of a release to travel offsite and affect the public.

Because P3 would not cause or exacerbate flooding to areas offsite and proper implementation of BMPs would reduce or limit the impact of a release to travel offsite, offsite flooding impacts due to construction or operation of P3 are **less than significant**.

Flood Hazard Areas and Relative Risk

Relative flood risk was determined by estimating the likelihood of a flood impacting the proposed P3 and evaluating the consequences resulting from those flood impacts (see **Soil & Water Resources Table 3**). The likelihood of flood at the P3 site varies depending on the type of hazard: river overtopping, coastal offshore storms, dam failure, and levee failure. Flood hazards are evaluated based on authorized maps identified by the appropriate regulating agency. Consequences of site inundation, on the other hand, are very project specific and not dependent on the cause of the flood.

Soil & Water Resources Table 3
Risk Assessment

Risk = Consequence x Likelihood			
	Higher Likelihood Impacts	Medium Likelihood Impacts	Lower Likelihood Impacts
High Consequence	High Risk	High Risk	Medium Risk
Medium Consequence	High Risk	Medium Risk	Low Risk
Low Consequence	Medium Risk	Low Risk	Low Risk

Source: COCAT 2013

Staff evaluated the consequences with respect to the severity of flood impacts on the following:

- Safety of people onsite and offsite
- Harm to biological resources from onsite toxins running offsite
- Effects of operational failure on electric grid reliability (local and system wide)

Staff determined that the consequences to onsite workers would be low because the impact of accidental release of toxic and hazardous substances are reduced or limited with implementation of LORS and conditions of certification discussed in this PSA (see the **Worker Safety & Fire Protection** and **Waste Management** sections). If a flood event triggered a local emergency with evacuations, onsite workers could have difficulty leaving the site if surrounding access roads are impassable. The site itself is somewhat elevated compared to the rest of the MGS property and adjacent properties, so workers could potentially remain onsite until flood levels subside enough to leave the site.

If a flood event results in operational failure of the facility, its inability to generate electricity is not expected to hinder local emergency response activities or threaten community safety. The electric grid (both local and system wide) is designed with redundancies to account for unexpected short- and long-term outages of a facility. Therefore, staff concludes that the overall consequences of flood damage are low, because P3 is not a critical facility[23] and its location would not exacerbate offsite flood impacts.

The release of contamination or toxic substances during a flood event is prevented or minimized by implementing a Hazardous Materials Management Program (discussed in the **Worker Safety & Fire Protection** section) and Operation Waste Management Plan (discussed in the **Waste Management** section). Handling of toxic and hazardous substances must follow strict management regulations, including secure storage with secondary containment. Hazardous waste must also be managed in accordance with regulations for onsite storage followed by proper offsite disposal based on the amounts collected and time of storage on site. Implementation of these and similar procedures would protect the environment and the safety of workers onsite during normal operating conditions. Should a flood event occur, these BMPs would reduce or limit the impact of a release to travel offsite and affect the public.

To determine the likelihood of a hazard occurring, staff evaluated flood hazards based on Federal Emergency Management Agency (FEMA) maps. The magnitude of flood used nationwide as the standard for floodplain management is a flood having a probability of occurrence of 1 percent in any given year. This flood is also known as the 1-percent annual chance flood,[24] or base flood. The Federal Insurance Rate Map (FIRM) is the official map created and distributed by FEMA for the National Flood Insurance Program (NFIP) that shows areas subject to inundation by the base flood for participating communities. FIRMs contain flood risk information based on historic, meteorologic, hydrologic, and hydraulic data, as well as open-space conditions, flood control works, and development.

[23] Staff explains this determination in the “Critical Infrastructure” discussion of **Appendix SW-1**.

[24] Also commonly called a *100-year flood*, it refers to a flood that statistically has a 1 percent chance of occurring once at a particular location in any given year. Similarly, a *100- year storm* refers to a rainfall event that statistically has this same 1-percent chance of occurring. However, not every 100-year storm corresponds to a 100-year flood because several factors can independently influence the cause-and-effect relation between rainfall and streamflow. For instance, if a 100-year storm is preceded by smaller storms, the saturated ground could increase runoff and result in more flooding than expected.

As a condition of participation in NFIP, the city of Oxnard adopted a floodplain management ordinance that meets or exceeds the minimum NFIP criteria. The ordinance regulates new and existing development in mapped floodplains based on the effective FIRM for the area. FEMA, which manages flood risk on the national level, initiated a five-year plan to update flood hazard maps. Currently, Oxnard's effective FIRM is dated 2010. FEMA updates are in progress and preliminary FIRMs are expected to be available sometime mid-2016. The following flood hazard discussions are based on the effective 2010 FIRM and the Draft Work maps (the precursor to preliminary maps) as shown in **Soil & Water Resources Figures 4** and **5**. The Final Staff Assessment (FSA) will include updated information if preliminary FIRMs are available at that time.[25]

Staff also discusses two potential hazards not included in FEMA maps: flooding due to dam failure and beach erosion due to sediment deficiency. These topics are mentioned in various public comments concerned about construction of P3 at the proposed site.

Hazard – Riverine Flooding

Prior to agricultural development within the region, large areas of the Oxnard Plain were historically a part of the extensive wetland and floodplain complex of the Santa Clara River Delta. Over the years, numerous levees were built to protect the agricultural lands and urban development along the river, but these areas are subject to inundation during severe flood events, typically as the result of longer intervals of rain or a series of winter storms.

FEMA prepares FIRMs that show the 1-percent annual chance floodplain boundaries based on a detailed study that includes a hydrologic analysis of the Santa Clara River watershed to determine the probability that a discharge of a certain size will occur and a hydraulic analysis to determine the characteristics and depth of the flood that results from that discharge. The FIRMs also show floodplain boundaries for the 500-year flood, which is the flood having a 0.2-percent chance of occurrence in any given year. The Santa Clara River's designated floodway is shown as its channel plus the portion of adjacent floodplain needed to convey the base or 1-percent annual chance flood event without increasing flood levels by more than one foot and without increasing velocities of flood water.

Oxnard's effective FIRM dated 2010 (see **Soil & Water Resources Figure 4**) shows that the proposed P3 site is not located within the base flood boundary or within the designated floodway. The southwest corner of the site is located within the 500-year floodplain boundary, which does not require purchase of flood insurance. Because the likelihood of floodwaters from the Santa Clara River reaching the site is low and the consequences of flood damage are low (P3 is not a critical facility[26] and its location would not exacerbate offsite impacts), from **Soil & Water Resources Table 3** staff concludes this flood **risk is low**.

[25] For more information, see the "FEMA Hazard Map Update" discussion of **Appendix SW-1**.

[26] Staff explains this determination in the "Critical Infrastructure" discussion of **Appendix SW-1**.

As discussed above in “Flood Hazard Areas and Relative Risk”, FEMA is in the process of updating FIRMs of Ventura County. The FSA will include updated information if preliminary FIRMs are available at that time.

Hazard – Coastal Flooding

The water level along the shoreline is constantly moving. High and low tides are affected by astronomical position (the gravitational pull of the moon and sun acting on a rotating Earth), which result in daily, monthly, and annual variations of tide elevations. The surf zone is the area that alternates between the advance and retreat of the water level, where dominant processes include wave setup, runup, overtopping, and erosion. The backshore zone is the area that is outside the normal surf zone, which is normally dry and subject to development. Coastal flooding occurs when the backshore zone becomes inundated with ocean water.

Coastal flooding in California can have different causes (FEMA 2015b):

- Pacific Winter Storms – During the winter, storm systems from the Aleutian Islands, Hawaii (“Pineapple Express”), and other parts of the North Pacific impact the California coastline. These low-pressure systems generate large waves and meteorological effects can elevate tide levels along the coast.
- Remote Swell Events – Pacific Ocean swell is generated by remote storms from other regions, such as offshore Baja California, New Zealand, and other areas of the North Pacific. Storm types include offshore extra-tropical storms, tropical storms, hurricanes, and southern hemisphere swell. Remote swell events can be difficult to predict.
- Extreme High Tide Inundation – When Pacific Ocean storms coincide with high tides, storm surge due to meteorological effects can further elevate open coast water levels to produce extreme high tides. El Niño conditions along the California coast can also contribute to storm surge and produce extraordinarily high water levels. Extreme high tides can exceed eight feet above Mean Lower Low Water (MLLW) in Southern and Central California.
- El Niño Winter Storms – During El Niño winters, atmospheric and oceanographic conditions in the Pacific Ocean produce severe extra-tropical winter storms that impact the California coast. Storms follow a more southerly track and bring intense rainfall and storm conditions. Tides are elevated by approximately six to twelve inches above normal throughout the winter. Changes in alongshore sediment transport patterns can greatly erode beaches and decrease beach width, exposing areas typically protected from ocean swell.
- Tsunamis – Tsunamis are long period waves generated primarily by earthquakes, but can be caused by volcanic eruptions or landslides.

The 1-percent annual chance flood is defined as the basis for hazard zone mapping by FEMA. Unlike the Atlantic and Gulf coasts (where the 100-year flood is typically associated with the 100-year storm event), waves on the Pacific Coast may be associated with both local and distant storms; water levels are influenced by El Niño, setup, and tides; and low frequency oscillations in the surf zone significantly influence runup. In other words, no single mechanism is responsible for the 1-percent annual

chance flood. Additionally, numerous combinations of waves and water levels during any given storm event can affect the delineated flood hazard boundary due to differing responses in the form of runup, setup, erosion, or coastal structure interaction in the backshore zone. Therefore, for the Pacific Coast, FEMA determines the 1-percent annual chance flood characteristics from response statistics rather than event statistics.[27]

Coastal flood hazard zones shown in FIRMs for coastal areas are developed from a detailed analysis of waves, water levels, wave effects, and shoreline response. Flood hazard zones are generally divided into three categories:

1. VE Zones: coastal high hazard areas where wave action and/or high-velocity water can cause structural damage during the 1-percent annual chance flood[28];

2. AE Zones: areas of inundation by the 1-percent annual chance flood, where flood hazards are not as severe as in VE zones; and

3. X Zones: areas subject to flooding by floods more severe than the 1-percent annual chance flood.

Oxnard's effective FIRM dated 2010 (see **Soil & Water Resources Figure 4**) shows that the proposed P3 site is not located within the 1-percent annual chance flood. As discussed above in "Flood Hazard Areas and Relative Risk", FEMA is in the process of updating FIRMs of Ventura County.[29] The Draft Work maps (the precursor to preliminary maps) show that the coastal hazard boundary is expected to move inland, but the P3 site is still outside the 1-percent chance floodplain (see **Soil & Water Resources Figure 5**). Because the likelihood of coastal flooding reaching the site is low and the consequences of flood damage are low (P3 is not a critical facility[30] and its location would not exacerbate offsite impacts), from **Soil & Water Resources Table 3** staff concludes this flood **risk would be low**. Staff will incorporate any relevant updates to the Draft Work maps if available for the analysis in the Final Staff Assessment.

[27] For more information, see the "Hazard Zone Mapping" discussion of **Appendix SW-1**.

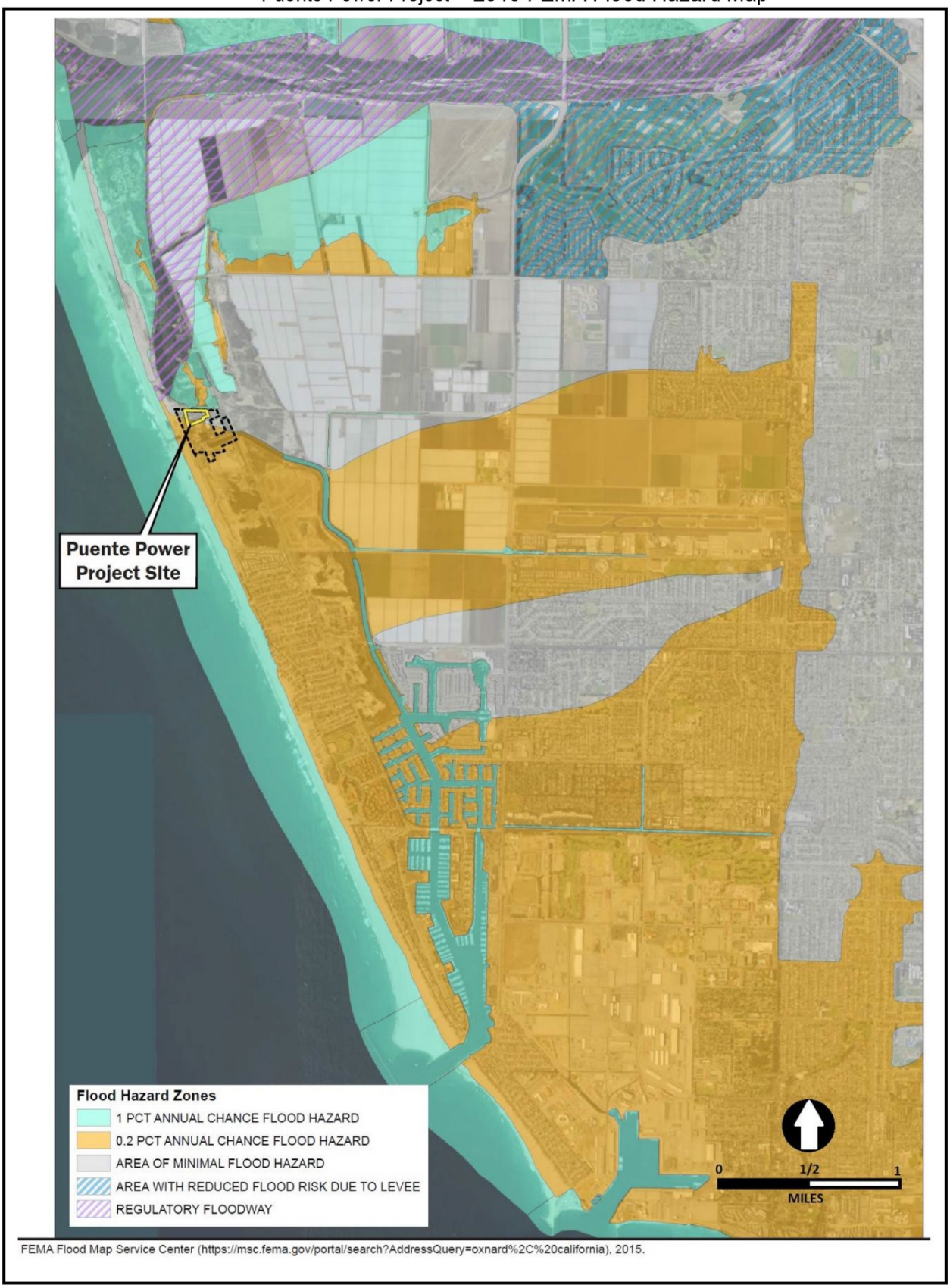
[28] Defined by FEMA as meeting one of more of the following criteria: wave runup elevation is at least three feet above the eroded ground profile; wave overtopping splash exceeds the crest of a barrier by three feet or more; landward high-velocity flow (based on flood depth and velocity) is 200 ft^3/s^2 or more; breaking wave height is three feet more; and/or fits the criteria of a primary frontal dune zone (NHC 2005).

[29] For more information, see the "FEMA Hazard Map Update" discussion of **Appendix SW-1**.

[30] Staff explains this determination in the "Critical Infrastructure" discussion of **Appendix SW-1**.

SOIL & WATER RESOURCES - FIGURE 4

Puente Power Project – 2010 FEMA Flood Hazard Map



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SOURCE: COO 2015m

SOIL & WATER RESOURCES - FIGURE 5

Puente Power Project – DRAFT Work Maps of FEMA Flood Coastal Hazards



The updated hazard boundary near the P3 site, above, is approximately 230 feet closer inland compared to the 2010 Effective FIRM. The additional hazard area is shaded in pink below.



Esri, HERE, DeLorme, iPC, NGA, USGS | USDA FSA, Microsoft

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SOURCE: FEMA's Geoplatform (http://arcg.is/1OXJVRc) accessed March 12, 2016

Hazard – Levee Failure

Levees are designed to provide a specific level of flood protection. The existing Santa Clara River Levee System (SCR-3) located along the river's southern bank downstream of Highway 101 protects over 3,800 structures and roadways located in the northern portion of the city of Oxnard. SCR-3 is approximately two miles long and composed of four reaches. All four reaches were built by different agencies over many years, with different sections completed for different purposes. Consequently, in its current configuration, the existing SCR-3 levee system does not meet the Federally-mandated levee certification regulations[31]. In addition, the section between the Union Pacific Rail Road (UPRR) crossing and the Highway 101 Bridge currently has no levee, creating a 750-foot-long "gap" in flood protection. Over 3,800 structures and roadways located in the northern portion of the city of Oxnard are currently subject to flooding due to these existing deficiencies (ASPEN 2015).

The current effective FIRM for the Santa Clara River in the vicinity of SCR-3 was issued January 2010, but revised the next day by Letter of Map Revision (LOMR) to revert to the previously effective map based on 1985 data and analyses. The lands adjacent to SCR-3 and the "gap" are currently designated as moderate risk areas with reduced flood risk due to the levee (see **Soil & Water Resources Figure 4**), and property owners are not required to purchase flood insurance at this time. However, without implementation of SCR-3 levee improvements and closure of the gap, it is expected that property owners with federally backed mortgages would need to purchase flood insurance upon the next FIRM revision currently in progress by FEMA. The Ventura County Watershed Protection District (VCWPD) will implement an improvement project to rehabilitate SCR-3 (plus the southern portion of the "gap") to comply with FEMA levee certification requirements. Flood protection between the UPRR and Highway 101 would be provided as part of The Village Specific Plan development, with the city of Oxnard acting as lead agency for that component (ASPEN 2015).

Based on the current effective FIRM, the risk of a potential levee failure of SCR-3 to impact the P3 site is low. As shown on **Soil & Water Resources Figure 4**, the area affected by the levee certification deficiencies (identified as area with reduced flood risk due to levee) is approximately two miles away from the proposed P3 site. When improvements are complete to comply with FEMA levee certification requirements the chance of levee failure drops considerably. Because the likelihood of levee failure is low and the consequences of flood damage are low (P3 is not a critical facility[32] and its location would not exacerbate offsite impacts), from **Soil & Water Resources Table 3** staff concludes flood risk due to levee failure **is low**.

Hazard – Dam Failure

Ventura County is vulnerable to inundation from dam failure, with the most susceptible areas located along the Santa Clara River such as the city of Oxnard. There are three major dams on the Santa Clara River located upstream from the city: the Santa Felicia Dam at Lake Piru, the Castaic Lake Dam, and the Pyramid Lake Dam. These water

[31] Found in the Code of Federal Regulations (44 CFR Section 65.10).

[32] Staff explains this determination in the "Critical Infrastructure" discussion of **Appendix SW-1**.

storage reservoirs are also designed as flood and debris control during storm events. To cause a catastrophic flood, dam failure would have to occur during extreme storm events that cause inflow to the basin above the emergency spillway freeboard capacity. All three dams are subject to state regulations through the California Division of Safety of Dams, which inspects them annually to ensure that they are in good operating condition and requires studies of potential flooding in the event of sudden or total dam failure. The agency that owns the dam prepares dam inundation maps that contain flood-wave arrival time estimates and flood inundation limits (URS 2005).

There is no record of failure of any dam located in Ventura County. However in 1928, failure of the St. Francis Dam located in the San Francisquitos Canyon in Los Angeles County resulted in catastrophic impacts in Ventura County. Constructed to store water from the Los Angeles-Owens River Aqueduct, the dam collapsed after it was completely filled for the first time. At the peak of the flood, the wall of water was reported to be 78 feet high. By the time it hit Santa Paula, 42 miles south of the dam, the water was estimated to be 25 feet deep. Nearly 500 people were killed, and damage estimates exceeded $20 million (AEC 2015b).

Today, the risk of any regional, state-regulated dam failing is considered extremely remote. Because dam inundation maps anticipate flooding throughout the entire city of Oxnard and other parts of Ventura County, a Dam Failure Response Plan was developed. Disaster coordination and planning is the responsibility of the Sheriff's Department through its Office of Emergency Services, which maintains this plan and other hazard mitigation plans for the county (VCRMA 2013). Because the likelihood of dam failure is extremely low and the consequences of flood damage are low (P3 is not a critical facility and its location would not exacerbate offsite impacts), from **Soil & Water Resources Table 3** staff concludes this flood **risk is low**.

Hazard – Sediment Deficiency to Beaches

Littoral drift refers to the movement of sand in the direction of the longshore current, analogous to a river of sand moving parallel to the shore. Ventura County is located in the Santa Barbara Littoral Cell where a southward net littoral drift dominates moving sand southward or southeastward along the beaches. Sediments enter the littoral cell primarily from discharge of coastal rivers and streams as well as bluff erosion. Ultimately, the sand is lost from the system or cell through either a submarine canyon or a coastal dune field (CSMW 2006).

The shoreline within a littoral cell is dynamic. Beach widths change seasonally due to changes in weather, storm intensity, and wave climate. Seasonal beach erosion is typically a recoverable process. Strong winter waves are more erosive and cut away at the sand, and the smaller, less energetic summer waves move sand onshore to rebuild the beach. The long-term width of the beaches within a cell is governed by the long-term balance between the volumes of sand entering and leaving a littoral cell. Over years and decades, beaches can erode (narrow), accrete (widen), or remain in equilibrium, because of available sand within a littoral cell. When the construction of dams for inland reservoirs reduces the supply of sand from the river or large coastal engineering structures such as breakwaters or jetties alter the movement of sand along the shore, affected beaches can experience permanent erosion and narrowing or take years or decades to re-establish equilibrium (CSMW 2006).

The P3 proposed site is located in the section of the Santa Barbara Littoral Cell known as the Oxnard Plain Reach, which extends from the mouth of the Ventura River to Port Hueneme Harbor. Sediment supply along this reach is dominated by contributions of sediment discharged from the Ventura River and the Santa Clara River. Sediment moves southward along this reach and, historically, was lost from the cell into the submarine Hueneme Canyon.

Construction of the Ventura and Channel Islands harbors modified the natural transport of sediment by trapping sand to keep their entrances open for navigation. Sand is stored in these sediment traps until it is dredged, ideally once or twice a year (CSMW 2007). The dredged material is deposited down the coast to beaches that depend on this once-steady supply of sand. In the past, the U.S. Army Corps of Engineers typically allocated federal funds to dredge these sediment traps, but multiple years of budget cuts and partial funding have only been adequate to dredge a fraction of the sand that is normally dredged for maintenance of these harbors.

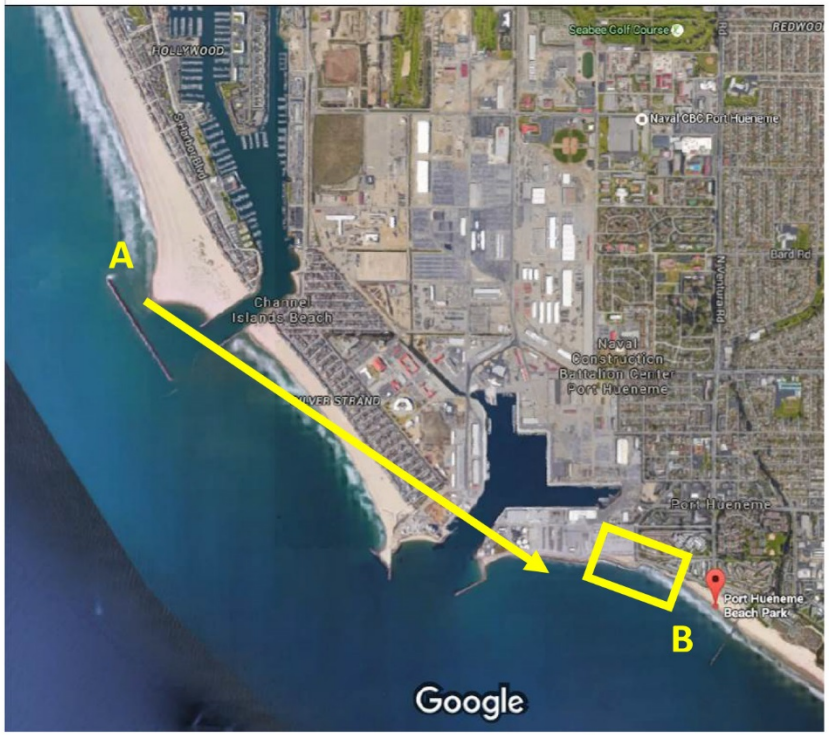
Beach width can help protect shores by dispersing some wave energy, especially during storms. An insufficient supply of sediment, however, cannot maintain the beach width. Nearly all of the alongshore sand transport is trapped at Channel Islands Harbor, so sand is dredged to maintain the navigation channel and moved downcoast to Hueneme Beach, about five miles south of the proposed project site (BEA 2009). Hueneme Beach has experienced dramatic erosion as a consequence of lapsed dredging of Channel Islands Harbor (see **Soil & Water Resources Figure 6**).

Intervenors have expressed concern that insufficient dredging of Ventura Harbor could cause the beach to narrow near the P3 project (COO 2015a, CEC 2015ee page 57). This stretch of the shoreline has experienced an overall increase of beach width over the last 50 years, which would not be possible without a sufficient supply of sediment to replace the sand lost to littoral drift. Intervenors expect that several years of lapsed dredging would cause erosion and coastal flooding similar to the substantive erosion of Hueneme Beach, which would make P3 extremely vulnerable to coastal flooding. Testimony submitted to the CPUC (COO 2015a) compares photos of the beach width in front of the MGS outfall taken in 1966 and 2012 that shows beach widening by at least 200 feet, suggesting that the main contributor was sand bypassing from Ventura Harbor. Its conclusions included the statement: “If the dredging [of Ventura Harbor] ceases, the beaches [adjacent to the MGS property] should be expected to narrow and dunes reduce in height similar to the immediate post construction of the Ventura Harbor [in 1963], which would magnify the possibility of coastal hazards impacting the expansion site.”

Staff agrees that sediment from Ventura Harbor dredging contributes to maintaining the beach width near P3. However, staff concludes this contribution is small compared to the contribution of sediment supplied by the Santa Clara River. Although beach width could narrow if dredging of Ventura Harbor ceases, sediment loads would continue from the Santa Clara River, which comprises the majority of overall sediment supply to the littoral cell (see **Soil & Water Resources Figure 7**). The volume of littoral drift between Santa Barbara Harbor and the Ventura River is essentially constant, averaging about 315,000 cubic yards per year (cu-yd/yr). The volume roughly doubles to about 597,000 cu-yd/yr with sediment contributions from the Ventura River and beach erosion just to

SOIL & WATER RESOURCES - FIGURE 6

Puente Power Project – Erosion at Hueneme Beach



Imagery ©2015 Google, Data CSUMB SFML, CA OPC, Map data ©2015 Google



N34 08.28 W119 12.28 Image 201001309 Thu Sep 23 12:57:02 2010



N34 08.43 W119 12.21 Image 201308977 Sun Sep 29 12:05:07 2013

Above:
Sediment trap at Channel Islands Harbor (A) stops the littoral transport of sand to Hueneme Beach (B). Box is the location of beach photos.

Right:
Substantial beach erosion between 2010 (top) and 2013 (bottom) due to lapsed dredging of Channel Islands Harbor.

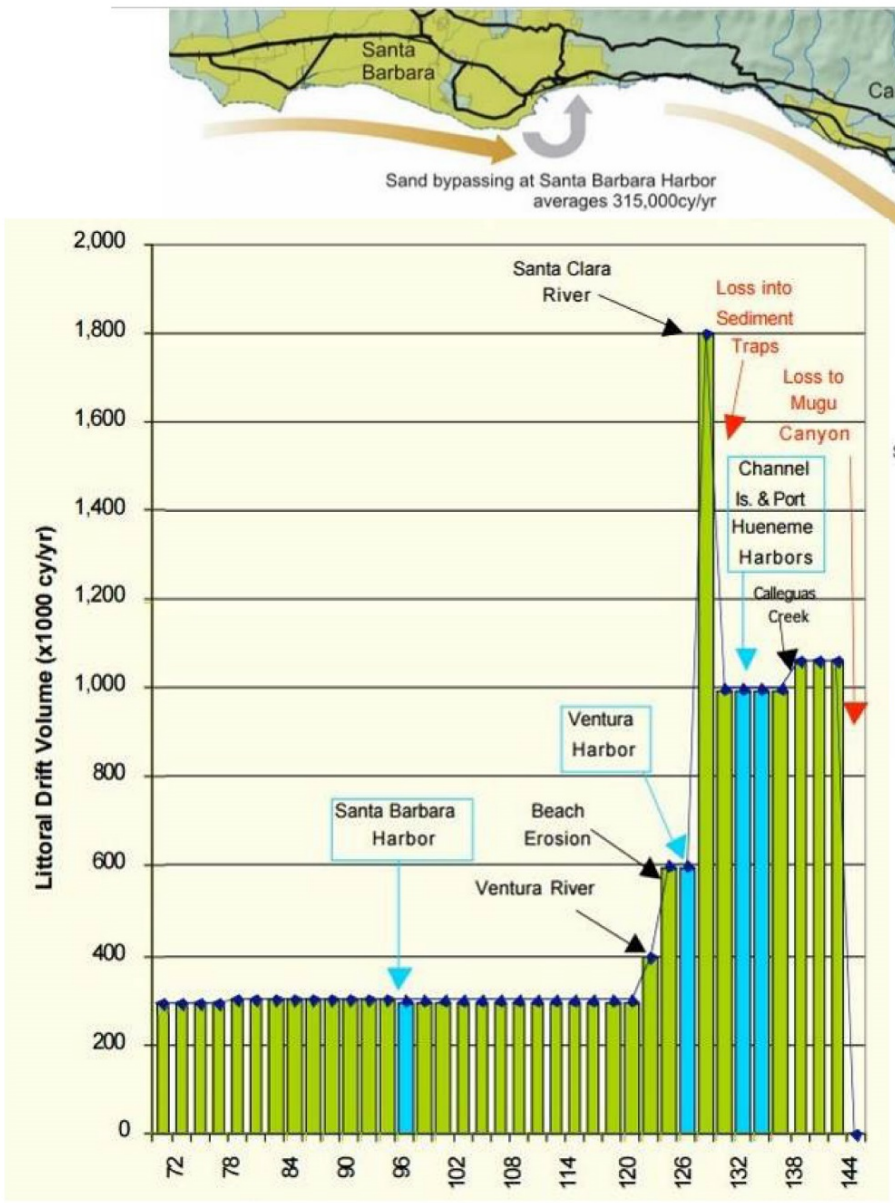
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Kenneth & Gabrielle Adelman
California Coastal Records Project
www.Californiacoastline.org

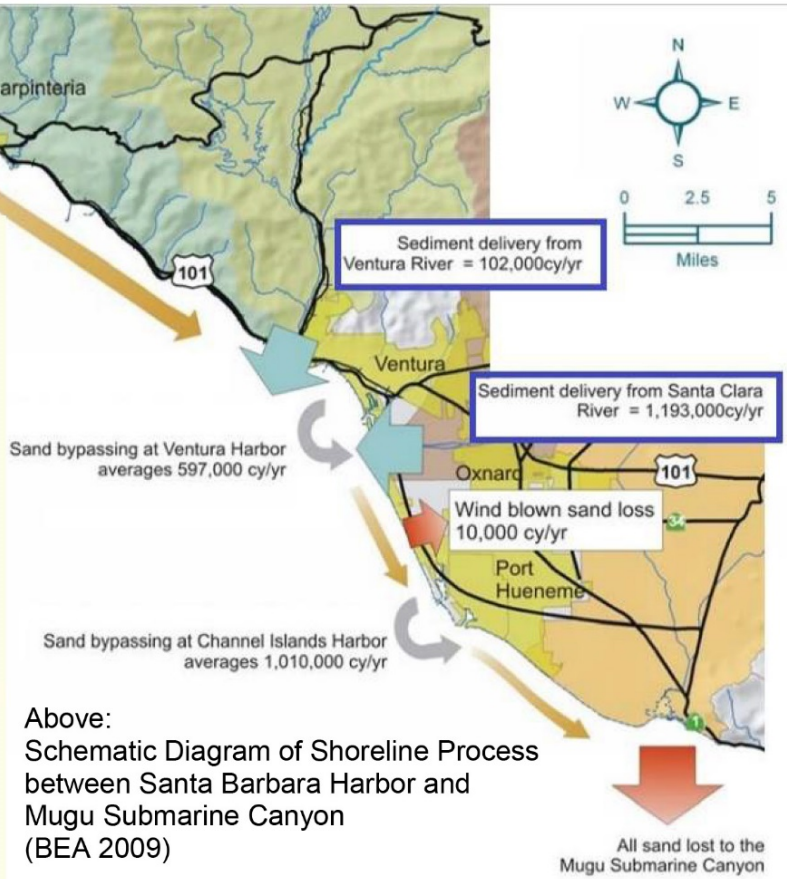
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SOURCE: www.Californiacoastline.org, 2015

SOIL & WATER RESOURCES - FIGURE 7

Puente Power Project – Average Annual Littoral Longshore Transport





Above:
Schematic Diagram of Shoreline Process between Santa Barbara Harbor and Mugu Submarine Canyon
(BEA 2009)

Left:
Littoral Longshore Transport Volumes between Santa Barbara Harbor and Mugu Submarine Canyon
(RUNYAN 2002)

Note: Values presented by these sources differ slightly, but degrees of magnitude are the same.

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SOURCE: BEA 2009 and RUNYAN 2002

the south of it. This larger volume becomes trapped at Ventura Harbor until dredging allows the sediment to continue its southern movement. Further south, the Santa Clara River contributes the majority of sediment into the littoral cell, averaging about 1,193,000 cu-yd/yr. This is the equivalent to twice the average volume dredged from Ventura Harbor. South of the Santa Clara River, littoral drift stops at the sediment trap constructed at Channel Islands Harbor, where sand accumulates until it is dredged. An average of about 1,010,000 cu-yd/yr is dredged to supply sand to Silver Strand Beach and Hueneme Beach located downshore of the harbor (BEA 2009). The annual average volume of sand supplied by both rivers and dredged from each harbor is summarized in **Soil & Water Resources Table 4**, which shows the increasing sand supply and changes of sediment movement near the P3 site.

Soil & Water Resources Table 4
Average Annual Rate of Littoral Drift and Supply

Oxnard Plain Reach	**Sand Movement** (average cu-yd/yr)	**Sand Supply** (average cu-yd/yr)
Santa Barbara Harbor	315,000	
Ventura River		102,000
Beach Erosion		180,000
Ventura Harbor	597,000	
Santa Clara River		1,193,000
P3 site is located between Santa Clara River and Channel Islands Harbor		
Channel Islands Harbor	1,010,000	

(Source: BEA 2009, RUNYAN 2002)

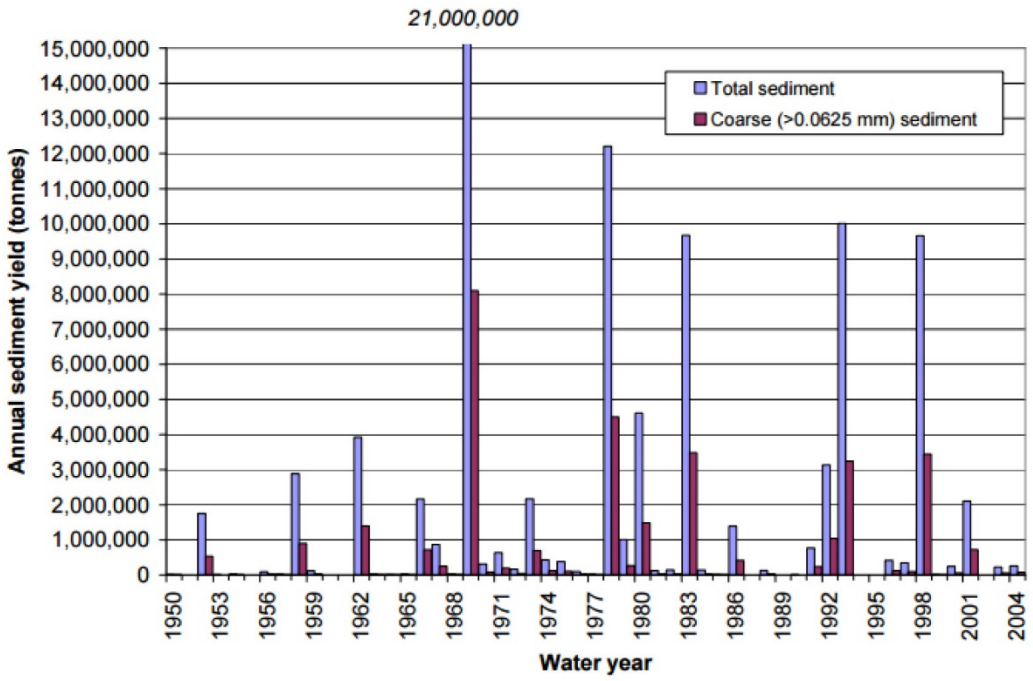
Despite the fact that flows in the Santa Clara River can vary dramatically and oftentimes a sandbar gradually forms at the mouth of the river (as discussed in "4.10.5.1.4 Santa Clara River"), wet years provide significant amounts of sediment for littoral transport during large floods[33] and breaches of the sandbar allow small contributions during dry years[34] (see **Soil & Water Resources Figure 8**). Infrequent severe floods are thought to be responsible for delivering the majority of sediment to the coast and a single large storm can deliver more sand to the beaches than multiple years of low to moderate rainfall (USGS 2006). Significant amounts of sediment from the Santa Clara River are closely tied to major flood events that occurred 1969, 1978, 1993, and 2005 (SWS 2011) which dominate sediment processes on beaches to the south of the river (BEA 2009).

[33] In general, the coarser sediment (>0.0625 mm) as shown in **Soil & Water Resources Figure 8** eventually provides sediment for littoral transport and supplies sediment that builds the barrier beach and causes mouth closure during periods of low river discharge (SWS 2011).

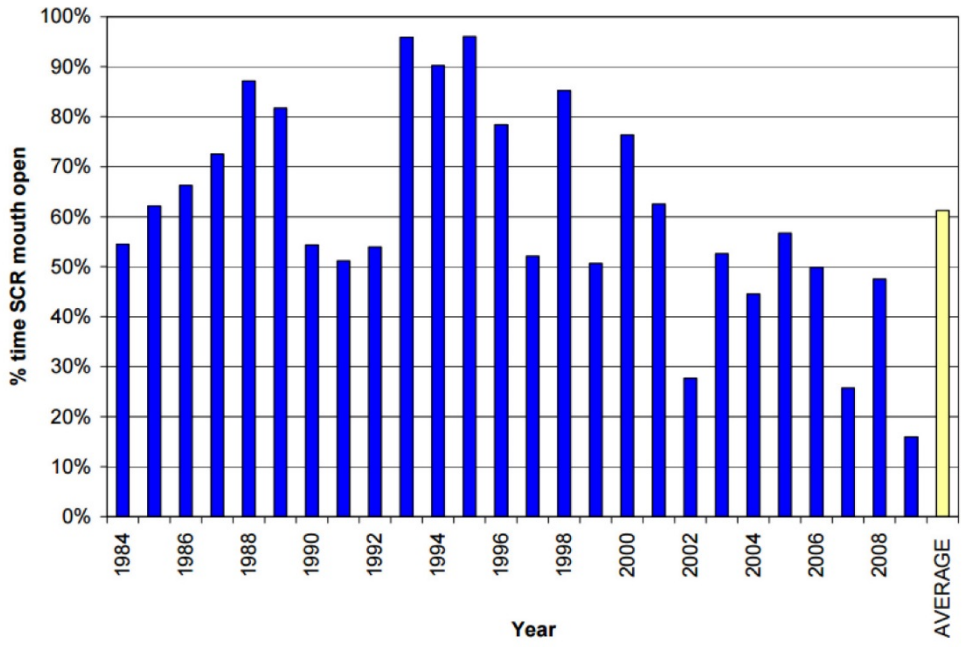
[34] At the mouth of the river, the city of Ventura Water Reclamation Facility discharges an average of approximately 8.4 mgd of treated effluent into the river. This discharge can cause the water level to rise above the sandbar resulting in a breach during times of low rainfall (SWS 2011).

SOIL & WATER RESOURCES - FIGURE 8

Puente Power Project – Sediment Yield of Santa Clara River



Calculated total sediment yield (suspended load + bedload) and coarse (>0.0625 mm) sediment yield for the Lower Santa Clara River at former Montalvo stream gauge (USGS 11114000).



Percentage of time that the Santa Clara River mouth was open on an annual basis. (City of Ventura)

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SOURCE: Geomorphic Assessment of the Santa Clara River Watershed (SWS 2011)

With an average annual drift of about 1,800,000 cu-yd/yr occurring past the Santa Clara River and only about 1,000,000 cu-yd/yr dredged from Channel Islands Harbor, there appears to be unaccounted sand on the order of 800,000 cu-yd/yr. The Oxnard Plain Reach is not well understood compared to the Goleta and Santa Barbara Reaches, but different studies suggest possible explanations. Because Channel Islands Harbor is not dredged to a consistent depth, sediment might be stored in the sand trap of the harbor until adequate funds are appropriated for dredging (RUNYAN 2002). Another possible explanation is that following the major flood events of the Santa Clara River, immense volumes of sand were discharged from the river and deposited to a nearshore delta, which builds onto the offshore delta (SWS 2011). In addition, a portion of the sand, about 10,000 cu-yd/yr, is estimated to be transported inland by wind, which helps build the dunes (BEA 2009). With multiple possibilities of sand storage, this region is considered to be sediment abundant, as opposed to sediment limited where wave energy is capable of moving more sand than exists on the beach (BEA 2009).

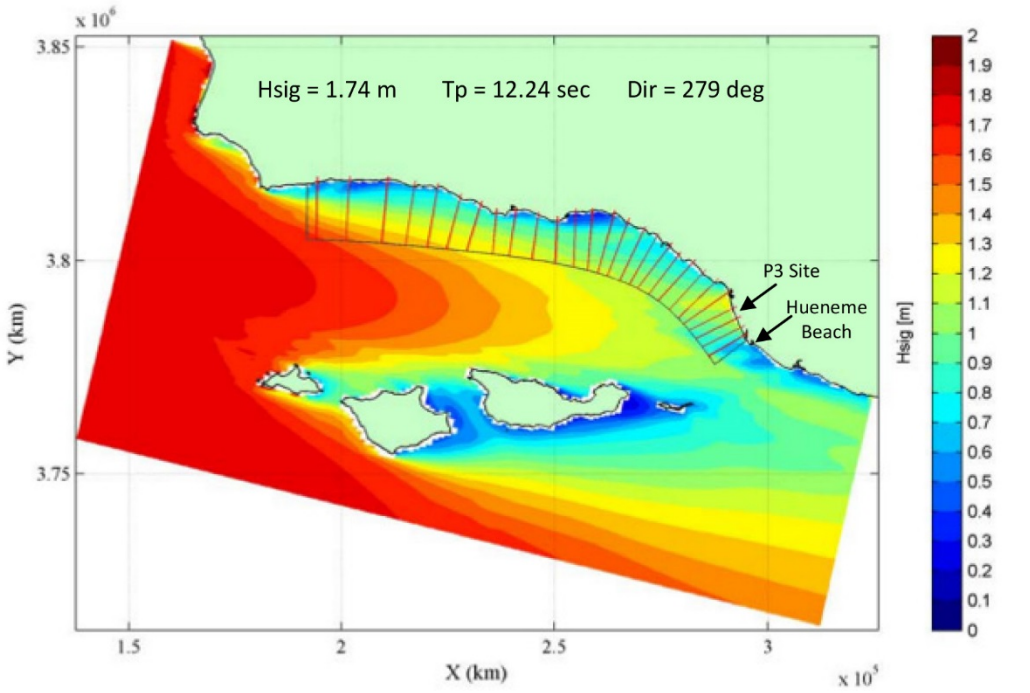
Regional sediment management in this area focuses on preservation of the natural river sediment supply as well as harbor sand bypassing programs. Potential effects of harbor dredging on beach width at the proposed P3 site are expected to be much less significant than observed damage to Hueneme Beach because littoral drift delivers sediment from the Santa Clara River to P3 while Channel Islands Harbor restricts littoral transport to Hueneme Beach. If Ventura Harbor dredging is insufficient but supply of sediment from the Santa Clara River watershed is assumed unchanged, then substantial erosion of the beach at P3 is unlikely. In other words, the lack of dredging at Ventura Harbor would not significantly reduce the volume of sand needed to maintain the beach width at the project site.

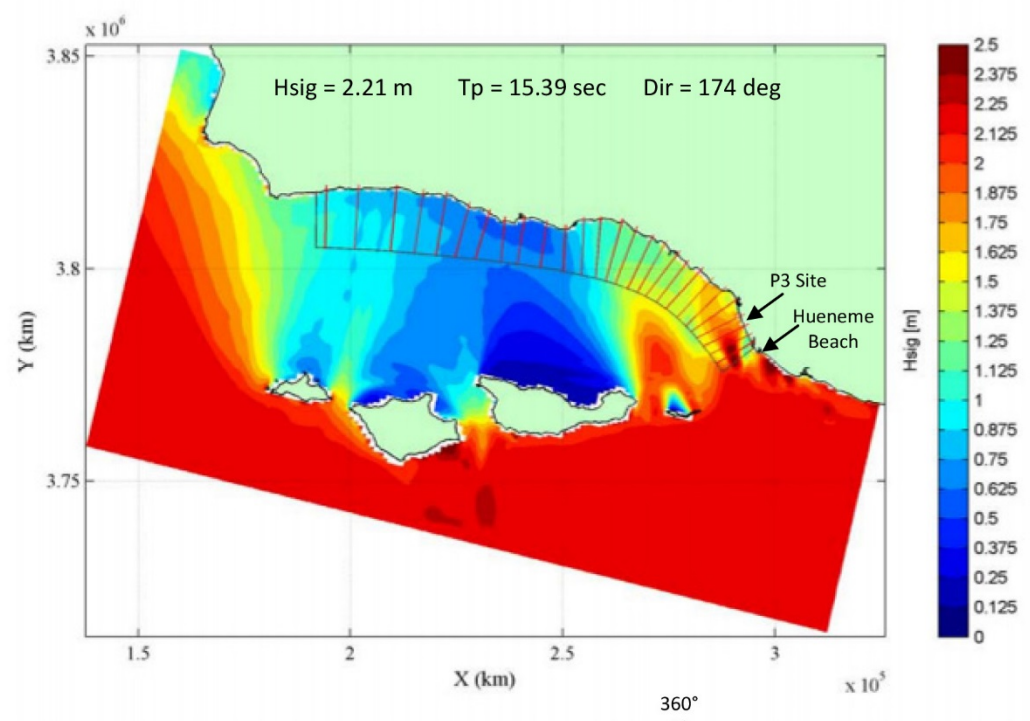
Other factors affecting local beach erosion in the Santa Barbara Littoral Cell are the prevailing wave climate and the local orientation of the coastline. Numerical modeling was used to identify and quantify the average annual sediment transport between Pt. Conception and Pt. Mugu. The sheltering effect of the Channel Islands causes the west/northwest swells to dominate, so net littoral drift moves sand southward or southeastward along the beaches. The less frequently occurring southeastern swell enters the littoral cell between the Channel Islands and Pt. Mugu and can affect south facing beaches, but most of the south facing coastline west of the Ventura River is sheltered from extreme wave events (see **Soil & Water Resources Figure 9**). No waves come from the north due to the sheltering effect of Pt. Conception (USGS 2009a).

McGrath State Beach (adjacent to the P3 site) and Hueneme Beach are both located outside the Channel Islands sheltering affect from southern swells. Although littoral drift is dominated by the western swell, the southern swell has a considerable effect on littoral movement in this area. Along western-facing shorelines in this area, the opposing swell directions can result in deceleration of littoral-drift rates. This slowdown of sediment corresponds with the decadal-scale accretion noted near the project site (USGS 2009a). Conversely, Hueneme Beach is mostly southern-facing and therefore more exposed to southern swells. Because Channel Islands Harbor restricts littoral transport to this area, significant erosion is highly likely unless harbor dredging or other activities can provide Hueneme Beach a sufficient supply of sediment.

SOIL & WATER RESOURCES - FIGURE 9

Puente Power Project – Sheltering Effect of the Channel Islands

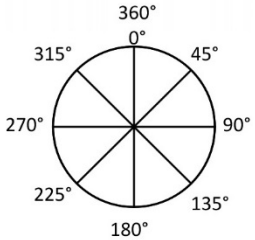




Hsig = Significant wave height (meters)

Tp = Peak period (seconds)

Dir = Direction (degrees)



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SOURCE: USGS 2009, Appendix E

Because the likelihood of sediment deficiency to the beach adjacent to the P3 site is low and the consequences of flood damage are low (P3 is not a critical facility[35] and its location would not exacerbate offsite impacts), from **Soil & Water Resources Table 3** staff concludes this flood **risk is low**.

Effects of Climate Change on Flood Hazards

The discussion in **Air Quality Appendix AQ-1** analyzes P3's potential impacts of burning natural gas and producing greenhouse gas emissions that would contribute cumulatively to climate change. Conversely, staff recognizes that current and future effects of global climate change could affect P3's facilities and operations. The following discussion considers the potential effects on both riverine and coastal flooding due to climate change during the project's 30-year operating life. Although CEQA does not require identification of significant effects of the environment (such as sea level rise) on a project, all state agencies including the Energy Commission are required to take climate change into account in planning decisions.[36] Staff's assessment of future flooding is similar to evaluation of present-day flooding, namely, evaluating the consequences with respect to the severity of flood impacts on the following:

- safety of people onsite
- local emergencies and evacuations
- electric grid reliability (local and system wide)

The discussion of potential flooding due to climate change is included here to serve the P3 Committee with information that staff believes to be useful, relevant, and appropriate.[37]

The following discussions analyze how climate change may affect flooding potential at the proposed site. As with the analysis of present-day hazards (above), staff does not discuss mitigation but instead assesses the flood risks (see **Soil & Water Resources Table 3**). Specifically, staff determines the relative flood risk by determining the likelihood of a flood impacting the proposed P3 and evaluating the consequences resulting from those flood impacts.[38]

Climate Change – Riverine Flooding

Climate change is expected to increase the portion of precipitation falling as rain rather than snow in the mountain areas, which could have significant impact on the timing and magnitude of runoff patterns. Although the 11-year running average of annual precipitation in California shows no clear indication of either an increasing or decreasing trend in precipitation between 1895 and 2013, annual average has shown large year-to-year variability. For example, the South Coast Region has an average annual

[35] Staff explains this determination in the "Critical Infrastructure" discussion of **Appendix SW-1**.

[36] Governor Schwarzenegger's Executive Order S-13-08 (November 2008) and Governor Brown's Executive Order B-30-15 (April 2015)

[37] **Appendix SW-1** and **Appendix SW-2** discuss several issues of contention in greater detail and explain how staff determined whether information is relevant and appropriate.

[38] Staff explains determination of risk in the "Hazard vs. Risk" discussion of **Appendix SW-1**.

precipitation of 17.38 inches, and one of the wettest winters (over 36 inches during 2005-2006 water year) was followed by the driest winter (5.5 inches during the 2007-2008 water year). Historic data also show periods of consecutive dry years, particularly since the 1970s (OEHHA 2013). While future changes in long-term average precipitation rates is difficult to predict, it is generally expected that extreme precipitation episodes such as atmospheric river storms[39] may become more extreme as the climate changes (DETT 2011). In effect, climate change may result in storm events that could flood larger areas for longer periods of time.

In addition, warmer temperatures and longer droughts are expected to contribute to more frequent and intense wildfires. The causes of fires are not necessarily climate-related, but hot, dry conditions can exacerbate ignitions from lightning, arson, and equipment use. An increase in the frequency and severity of wildfires reduces the availability of vegetation that absorbs runoff, which can result in increased runoff, erosion, and sedimentation. Areas damaged by these wildfires would have a greater potential for flooding and could affect the magnitude and frequency of flood events (OEHHA 2013).

Larger, more powerful flood flows could potentially damage levees and cause significant flooding. As discussed above in “Hazard - Levee Failure”, there is an improvement project in development to rehabilitate SCR-3 to comply with FEMA levee certification requirements. Construction of the proposed project is anticipated to occur over a 27-month period, beginning in 2016. A design flow in the Santa Clara River of 250,000 cubic feet per second (cfs) was used, which is the best available estimate of the 1-percent annual chance peak flow (consistent with estimates of future flows after further development of the watershed) plus an additional 10 percent factored in to address the inherent uncertainty of estimating (ASPEN 2015).

While climate change is expected to result in larger flood events, the magnitude of this increase is difficult to estimate. Designing the levee improvements for 10 percent over the 1-percent annual chance peak flow is conservative, but it may or may not sufficiently contain flows caused by atmospheric river storms or floods exacerbated by extensive wildfire damage to the watershed. Despite this uncertainty, a safety factor of 10 percent seems reasonable to staff considering this is in addition to minimum factors of safety incorporated into FEMA certification requirements.

The magnitude of future flood events is unknown, so the likelihood of floodwaters reaching the proposed P3 site could be medium or high. However, the site is approximately two miles away from the Santa Clara River and somewhat elevated compared to its surrounding area, which might help reduce its exposure. Even if floodwaters were to overtop a section of the levee, the consequences of flood damage are low (P3 is not a critical facility[40] and its location would not exacerbate offsite

[39] *Atmospheric River storms* are basically narrow intense bands of moist air that deliver moisture to a particular area for varying lengths of time. For example, the “Pineapple Express” moves warm, moist air from the tropics near Hawaii into California and produces intense rains over large areas.

[40] Staff explains this determination in the “Critical Infrastructure” discussion of **Appendix SW-1**.

impacts). As shown on **Soil & Water Resources Table 3,** this flood **risk is low to medium**.

Climate Change – Coastal Flooding

So far during these proceedings, the potential effect of climate change on coastal flooding is a topic that is often mentioned by the public and intervenors. Staff again stresses that CEQA does not require identification of significant effects of the environment (such as sea level rise) on a project; therefore, this subsection does not discuss conditions of certification to mitigate potential impacts. Instead, staff presents information to the Committee that meets the requirement of Executive Order B-30-15 that all state agencies, including the Energy Commission, are required to take climate change into account in planning decisions. The following discussion is consistent with state guidance[41] for sea-level rise (SLR) to evaluate risks of coastal flooding, and roughly follows Appendix B of the California Coastal Commission SLR Policy Guidance.

Extensive documentation regarding the impacts of climate change on coastal flooding has been docketed by the applicant, intervenors, and the public. Issues of contention are discussed in greater detail in **Appendix SW-1** and **Appendix SW-2** that explain how staff determined that the information presented below is relevant and appropriate.

Sea Level Rise – Best Available Science

Increasing temperatures from climate change result in sea level rise as land-based glaciers, snowfields, and ice sheets melt and the ocean's surface layer warms and thermally expands. State SLR guidance stresses the use of "the most recent and best available science", which for California is currently the 2012 National Research Council's Report (NRC 2012). Key points from this report include the following:

- The study developed latitudinally specific estimates of sea-level rise based on factors specific to the west coast. (The estimates applicable to Ventura County are shown in **Soil & Water Resources Table 5**).[42]
- Most coastal damage is caused by the confluence of large waves, storm surges, and high astronomical tides during a strong El Niño. Some models predict a northward shift in North Pacific storm tracks, and some observational studies report that the largest waves are getting higher and winds are getting stronger. Observational records are not long enough to confirm whether these are long-term trends.
- There is some controversy around research conclusions about significant wave heights based on buoy data. The observed trend in increased significant wave heights may reflect natural variability, rather than long-term change associated with rising greenhouse gases (in which case it could be expected to continue).
- Even if storminess or the frequency of high waves does not increase in the future, sea-level rise will magnify the adverse impact of storm surges and high waves on

[41] For more information, see the "Sea Level Rise Guidance" discussion of **Appendix SW-1**.

[42] The NRC sea level rise projections use the year 2000 as the base year, but there has been little, if any, measureable rise in sea level since 2000 for most locations in California. There is no need to adjust the SLR projections for projects that begin development in the near future and exist for a limited lifetime. This conservative approach would address the possibility that latent SLR might occur quickly (CCC 2015).

the coast. Extreme events can raise sea levels much faster than the projections for change in sea levels. The number and duration of extreme high water events are expected to increase.

- Confidence in the study's projections is likely to be highest in 2030 and perhaps 2050. All methods of developing projections have large uncertainties at 2100.
- Storms and sea-level rise are causing coastal cliffs, beaches, and dunes to retreat horizontally at rates from a few cm/yr to several m/yr. Cliffs could retreat horizontally by more than 30 m (about 100 feet) by 2100.
- The overall effect of sea level rise on natural shorelines will be influenced by several other important local factors, including shoreline composition, morphological setting, benthic biota, elevation, slope, sediment supply, vegetation, subsidence, tidal range, hydrology, and management.

Soil & Water Resources Table 5
California Sea Level Rise Projection using 2000 as the Baseline

Time Period	South of Cape Mendocino
2000 – 2030	0.13 to 0.98 foot
2000 – 2050	0.39 to 2.0 feet
2000 – 2100	1.38 to 5.48 feet

(Source: NRC 2012)

Sea Level Rise – Consider Timeframe and Risk Tolerance

If the proposed P3 project is approved, the facility is expected to begin commercial operation in 2020 and operate for 30 years to 2050. The NRC report states that global climate models provide a reasonable representation of the future climate system at shorter timescales (2030 and perhaps 2050), because confidence in the global and regional projections of SLR is relatively high. However, SLR projections after 2050 become increasingly more uncertain, and by 2100 uncertainties are large (NRC 2012). The large uncertainties of future projections are due in part to modeling uncertainties, but primarily due to uncertainties about future global greenhouse gas emissions, and uncertainties associated with the modeling of land ice melting rates. Therefore, for projects with timeframes beyond 2050, state SLR guidance emphasizes the importance of risk tolerance (see **Soil & Water Resources Table 3**) when establishing the high and low range of projected SLR. Similar recommendations to consider risk tolerance is also in the SLR guidance adopted by the California Coastal Commission, advising that a longer timeframe of 100 years or more should be considered for critical infrastructure.

Staff does not believe a 100-year operational life is appropriate for P3, in part because it is not considered critical infrastructure.[43] The AFC identifies the project's design lifespan to be 30 years, but the AFC also mentions the possibility of operating for longer depending on economics and other factors. A 20-year contract for gas-fired generation purchase agreement between the applicant and SCE was approved by the CPUC on

[43] Staff explains this determination in the "Critical Infrastructure" discussion of **Appendix SW-1**.

May 26, 2016, but a contract would not preclude P3 from operating beyond a 20-year agreement. Staff understands that a lifespan of 30 years for a "typical" natural gas power plant is generally accepted within the power industry, and that actual useful life depends on need, location, maintenance investments, partial load cycling operation, efficiency, functional obsolescence, the addition of renewable sources of generation to the system, and frequency of starts and stops. For these reasons, the proposed 30 years of commercial operation is a reasonable timeframe, so staff's primary focus is on the projected range of SLR by 2050 shown in **Soil & Water Resources Table 5** of a SLR range between 0.39 foot and 2.0 feet.[44]

California has a mixed semidiurnal tide cycle, meaning two high and two low tides every lunar day. To determine "present-day" local water levels for the proposed P3 site (such as mean tide level and mean high/low water), staff referenced tidal datum values of the closest tide station at Rincon Island.[45] These values represent the average elevations caused by astronomical position (gravitational interaction of the sun, moon and Earth) and do not include other factors that can raise water levels (such as storms, swells, and El Niño cycles). The tidal datum Mean Higher High Water (MHHW) is the best possible approximation of the threshold at which inundation can begin to occur, and coastal areas higher than MHHW are typically dry most of the time. The highest high tides within a calendar year are typically referred to as "king tides", which generally refers to the peak winter high tides and occurs two or three times a year.

Present-day elevation of MHHW is 5.36 feet. Coastal areas close to but higher than this elevation are typically dry most of the time, but occasional flooding may occur during winter when tides are higher. Present day "king tides" are at an elevation of about 7.0 feet about two or three times a year. By 2050, SLR is expected to increase water levels by 0.39 foot at a minimum or possibly as much as 2.0 feet. Staff added these low and high projections to present-day local tidal datum to calculate the projected range of future mean tide elevations, as shown in **Soil & Water Resources Table 6**. When the highest estimate of SLR is used, the projected MHHW in 2050 is higher than present-day king tides. Under this scenario, areas that currently flood twice a year during king tides could potentially flood every month for multiple days.

This potential increase of coastal flooding is depicted in **Soil & Water Resources Figure 10**. Staff collected data of daily tidal levels for 2015 and determined that the peak tide for that year occurred twice in November reaching 6.8 feet (shown in blue). Staff added 0.39 foot to the same daily tide data for 2015 and calculated the number of days that tide levels were 6.8 feet or above (shown in red) to represent the low SLR scenario. The process was repeated adding 2.0 feet (shown in green) to represent the high SLR scenario.

SLR would cause local tide levels to reach 7.0 feet or above during more days of the year. When the lowest SLR projection of 0.39 foot is assumed, the number of days that tides reach seven feet could increase from a few days each year (present-day) to a few days each month during the fall and winter by 2050. When the highest SLR projection of

[44] For more information, see the "Planning Horizon" discussion of **Appendix SW-1**.

[45] NOAA Tide Predictions of Rincon Island, Station ID: 9411270

2.0 feet is assumed, the number of days could increase to occurring every month of the year for two weeks or more. Even with the highest projection of king tides reaching nine feet, the elevation of the proposed site is at 14.0 feet. While these future tide elevations alone would not threaten the P3 site, they would contribute to potential wave damage and flooding when combined with other factors that raise water levels (described below).

Soil & Water Resources Table 6
Current and Future Station Tidal Datums for Rincon Island

Description	Elevation (feet, NAVD88)		
	Present Day	2050 Low Estimate	2050 High Estimate
Mean Higher-High Water (MHHW)	5.36	5.75	7.36
Mean High Water (MHW)	4.60	4.99	6.60
Mean Tide Level (MTL)	2.75	3.14	4.75
Mean Low Water (MLW)	0.89	1.28	2.89
Mean Lower-Low Water (MLLW)	-0.10	0.29	1.90

(Source: NOAA 2003, see **Appendix SW-3 Figure 2**)

Note: Present Day tidal datums are based on the latest published epoch (1983-2001) published by NOAA. This tidal epoch can be considered equivalent to the year 2000 baseline for the NRC projections (CCC 2015).

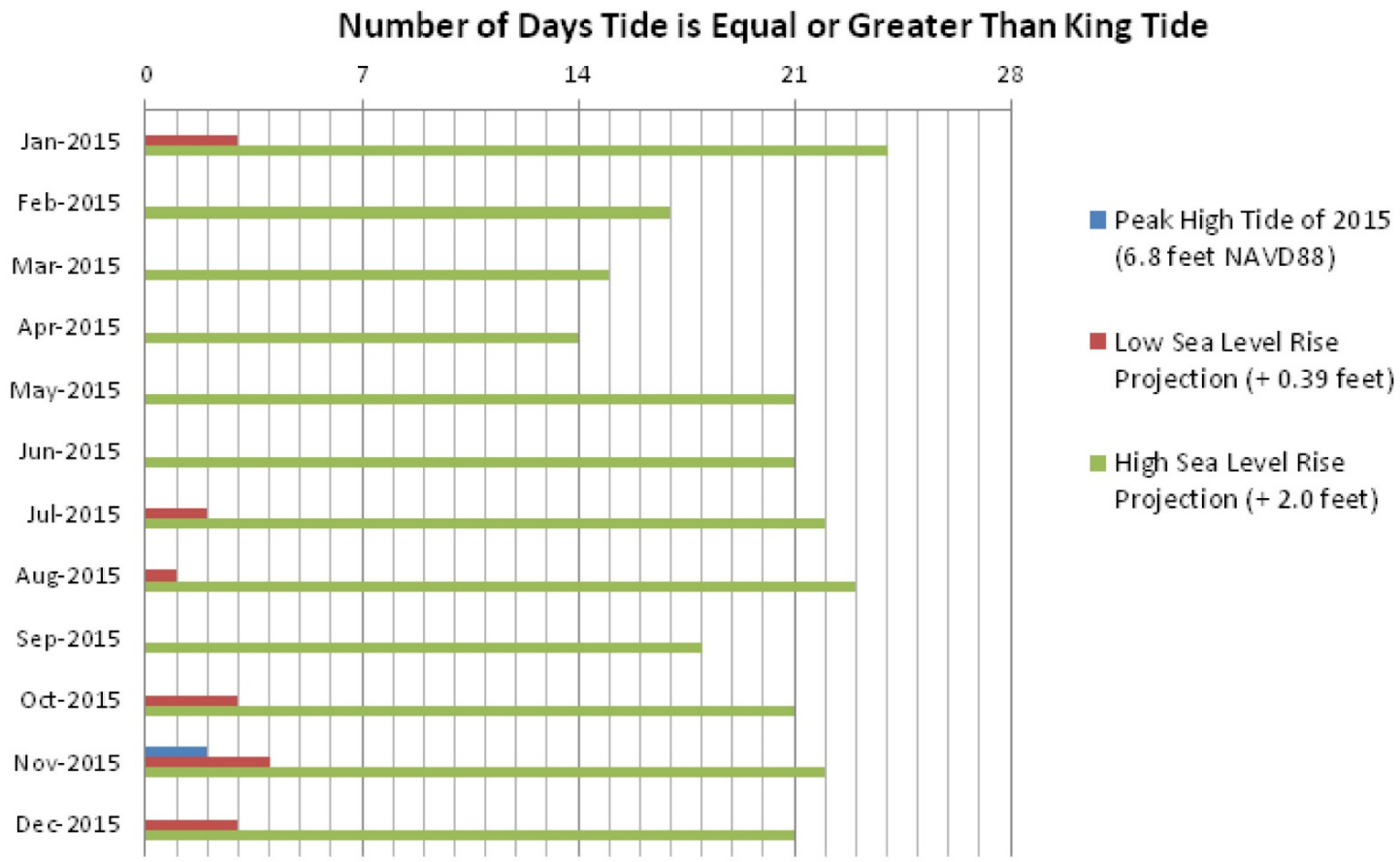
Sea Level Rise – Consider Storms and Other Extreme Events

Currently, storm waves that impact the coast during low tide generally will not cause coastal flooding. Most of the damage and subsequent flooding along the California coast occurs when large storms (wind forcing and storm surges) coincide with high tides or other contributors to local sea level changes such as remote swells, and Pacific Ocean basin-wide phenomena (e.g. El Niño Southern Oscillation, Pacific Decadal Oscillation (PDO)). Although each factor may only contribute one foot or less individually, the additive effects can cause a substantial rise to the total water level (TWL). These various effects are not always consistent and can occur for different lengths of time (potentially lasting days or months) which becomes difficult to estimate when or how long two or more factors may coincide (see **Soil & Water Resources Figure 11**). For example, local tides can raise levels five feet within a day and storm surges can raise sea levels five feet over the course of hours (or up to 25 feet during very extreme events). Slower, longer-term rates of change include El Niño type events that can raise sea levels by 1-2 feet over months.

Tides are periodic and very predictable, but the other potential components of sea-level fluctuations are less predictable. Storms are highly seasonal and episodic. During the winter months, intense extra-tropical storms follow a more southerly track and affect the central and southern portion of the state. Occasional “atmospheric rivers” originating in the tropics also approach from the southwest, bringing periods of heavy rains and warm temperatures. Deep-water swells travel primarily from the west and northwest, but southern swells can affect wave climate during the summer months.

SOIL & WATER RESOURCES - FIGURE 10

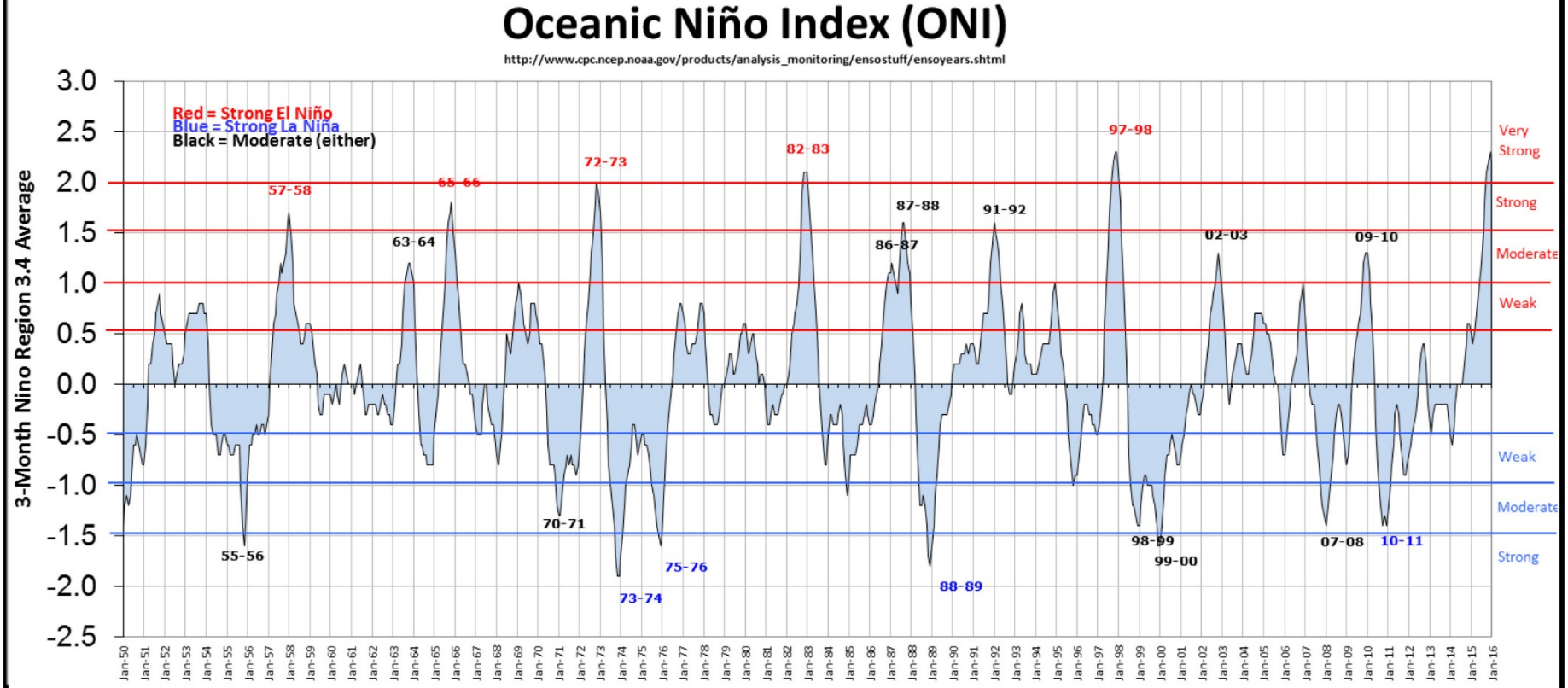
Puente Power Project – Potential Increase of Extreme Tides with Sea Level Rise



Source: 2015 daily tidal levels obtained from NOAA (Tide Predictions of Rincon Island Station ID: 9411270) were used by staff to develop this figure.

SOIL & WATER RESOURCES - FIGURE 11

Puente Power Project – Relative Strength of ENSO since 1950



El Niño–Southern Oscillation (ENSO) is one of the most important climate phenomena on Earth due to its ability to change the global atmospheric circulation, which in turn, influences temperature and precipitation across the globe. Because ENSO is such a large, complex, and dynamic system, several different indexes are used to measure the different aspects of the ocean and the atmosphere over the tropical Pacific. ENSO can often be predicted many seasons in advance of its strongest impacts on weather and climate. At NOAA, the official ENSO indicator is the Oceanic Niño Index (ONI), which is based on sea surface temperature (SST) in the east-central tropical Pacific Ocean. (NOAA Climate.gov)

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SOURCE: http://ggweather.com/enso/oni.htm accessed on March 8, 2016

During El Niño winter months, storms tend to increase in frequency and intensity in Southern California with higher monthly mean significant wave heights and extreme wave heights. Also during El Niño, there is a greater occurrence of large waves from the west, southwest, and south which can affect shorelines that are typically sheltered from northwest swells (see **Soil & Water Figure 9**). Extreme coastal events are usually caused by large amounts of energy from large waves that coincide with high tides or a strong El Niño cycle. For example, one of the more damaging storm seasons on record occurred during the 1982/83 El Niño when waves from a distant storm combined with locally generated waves and the highest tides of the year, resulting in substantial damage along much of the California Coast.

The NRC report states that all climate models project California will continue to experience winter storm activity in future decades, with storm-generated bursts of high sea levels and waves expected to vary from year to year and decade to decade. Short-period fluctuations of sea level may sometimes exceed eight inches, and storm-driven wave heights of three feet or even higher amplitudes than are seen in the historical record could easily occur. These variations will have greatest impact when they occur on days with high tides (NRC 2012). Although the effects of climate change on future storms are inconclusive (i.e. whether typical storms or El Niño events would be more intense or occur more often), the impact of SLR alone is expected to increase the number and duration of extreme high water events.[46]

As discussed in "Hazard – Coastal Flooding" above, the P3 site is currently located outside the VE Zone (coastal high hazard area during the 1-percent annual chance flood) on FEMA's current effective map and it is expected to stay outside the VE Zone in FEMA's revised preliminary map. This is consistent with past MGS records spanning more than 60 years that indicate no impacts or damage to the dunes or MGS facilities due to waves or storm surges. In particular, the two strongest El Niño cycles on record which occurred 1982/83 and 1997/98 (see **Soil & Water Figure 12**) were accompanied by large waves and storm surges that caused damage to Oxnard Shores and other locations in Ventura County, but no recorded damage at the MGS facility or impacts to MGS operations (PPP 2015k). However, FEMA coastal hazard maps do not incorporate any future affects due to climate change.

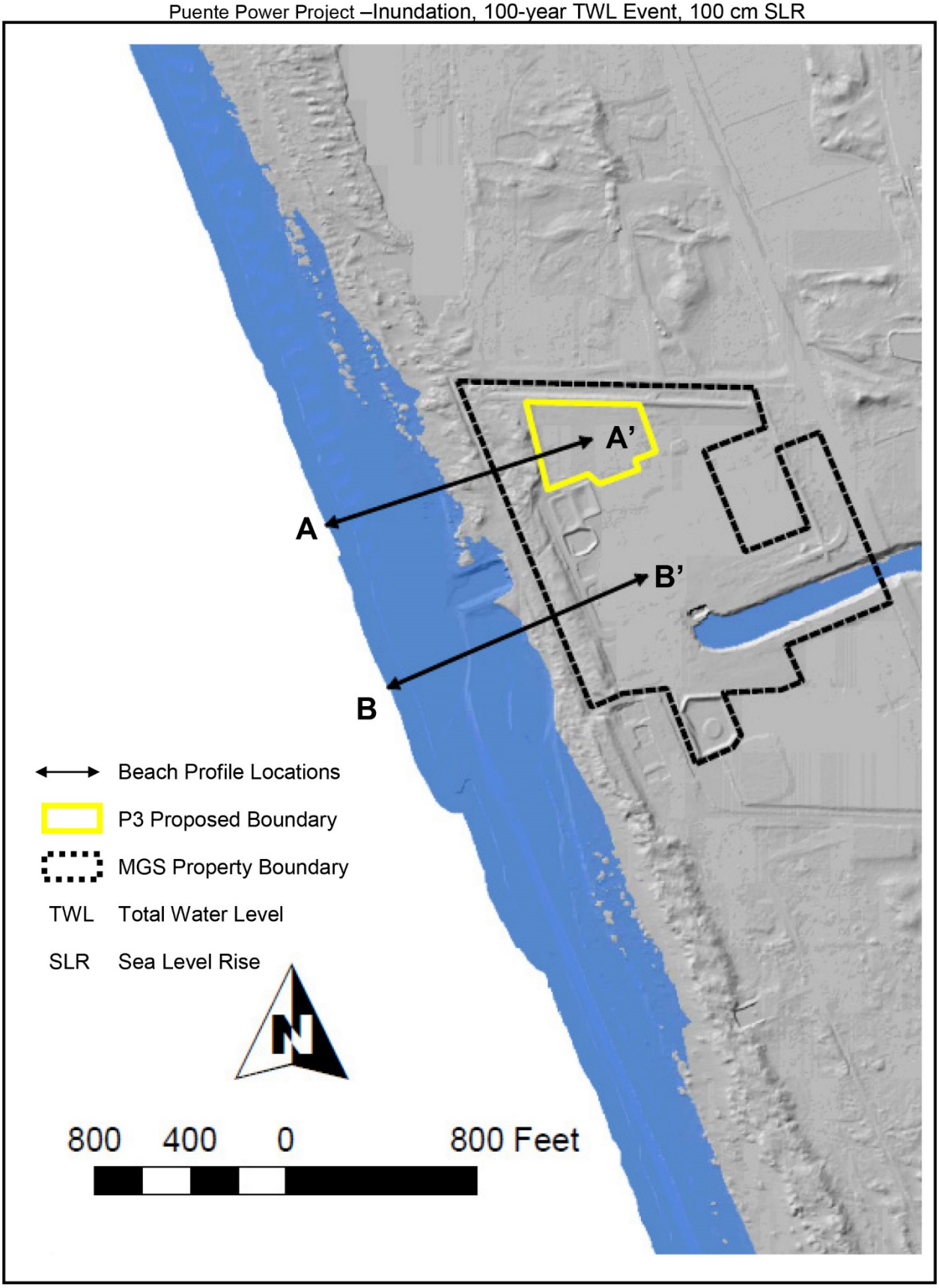
Many studies in recent years have used computer modeling to understand the extent of future coastal hazards due to climate change. Several government agencies and environmental institutes have translated the results of different studies into simplified, web-based tools available to local planners and other interested members of the public. Staff chose to use the Coastal Storm Modeling System (CoSMoS 3.0) because it projects Southern California coastal flooding and erosion due to both sea level rise and storms driven by climate change.[47] As shown in **Soil & Water Resources Figure 12** and **Figure 13**, coastal storm modeling shows no inundation of the site during a 100-year storm with 3.3 feet of SLR. Staff notes that these are initial results from a preliminary release in November 2015 of recently developed data covering Southern

[46] Similar to the impact of SLR on tides (see **Soil & Water Resources Figure 10**), the likelihood of an extreme flood event occurring in the future increases with the actual rate of sea level rise.

[47] Further discussion about Hazard Zone Mapping is in **Appendix SW-1**.

SOIL & WATER RESOURCES - FIGURE 12

Puente Power Project –Inundation, 100-year TWL Event, 100 cm SLR

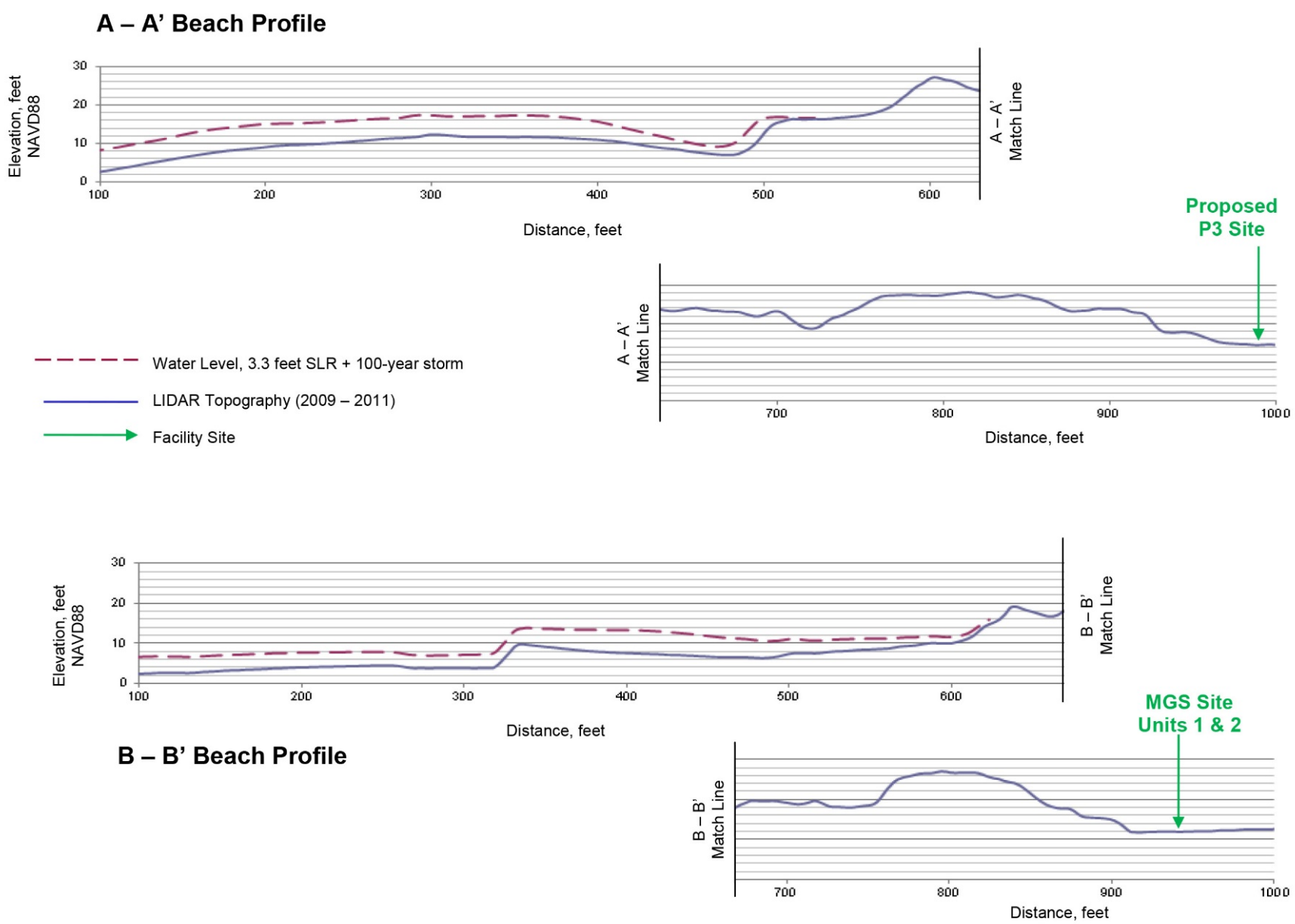


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SOURCE: USGS CoSMoS 3.0 (http://walrus.wr.usgs.gov/coastal_processes/cosmos/socal3.0/index.html) accessed March 21, 2016

SOIL & WATER RESOURCES - FIGURE 13

Puente Power Project – Beach Profiles from CoSMoS 3.0



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SOURCE: USGS CoSMoS 3.0 (http://walrus.wr.usgs.gov/coastal_processes/cosmos/socal3.0/index.html) accessed March 21, 2016

California. The full suite of CoSMoS 3.0 results and data covering 40 scenarios for Southern California will be officially released in summer 2016.

Sea Level Rise – Consider Changing Shorelines

The P3 site is separated from the Pacific Ocean by sand dunes and a wide, sandy beach. As discussed in "Soil Erosion and Dune Impacts" above, the beach and dunes form a dynamic system that protect low-lying coastal areas from flooding. Beach widths change seasonally due to changes in weather, storm intensity, and wave climate and seasonal beach erosion is typically a recoverable process. The distance between the toe of the dunes (the base of the dune facing the ocean) and the existing water level at MHHW can be up to 500 feet.

The NRC report states that storms and SLR are causing beaches and dunes to retreat horizontally. More intense storms could increase erosion and more frequent storms could hinder recovery.[48] An assessment of impacts from SLR to shoreline projects must address local shoreline changes, such as accounting for changes in El Niño frequency, storm intensity, sediment supply, or changing transport conditions.

CoSMoS 3.0 includes a numerical model that simulates long-term shoreline evolution due to sediment mobilized by waves and SLR. The modeled processes include longshore and cross-shore sediment transport, the effects of SLR, and sediment supply by natural sources and human activities. The results are integrated into flood mapping for more precise projections of future extents of flooding based on an evolving coastline. However, this information was not included in the preliminary release in November 2015 but will be part of the full suite of results scheduled for release in summer 2016.

Staff will refine its assessment of this risk after CoSMoS 3.0 releases long-term coastal evolution projections. Based on staff's research, this section of shoreline does not appear to be at high risk of erosion. A comparison between two aerial photographs taken in 1947 and 2014, show an increase in beach width that is conservatively estimated to be 200 feet (PPP 2015k, §54). The site-specific characteristics of the beach (e.g. wide, dune backed, relatively low exposure to southern swells, and downcoast from a large sediment source, the Santa Clara River) supports this long-term shoreline accretion. In addition, there was no recorded damage to the MGS facility during the two strongest El Niño cycles on record (occurring 1982/83 and 1997/98). El Niño years are typically times of significant sediment introduction to the coast because of increased likelihood of extreme rainfall events (USGS 2006). Sediment supply is not expected to decrease during the project lifetime.[49]

Sea Level Rise – Discussion

As instructed by the state guidance for sea level rise, staff's evaluation of risks of coastal flooding used the "most recent and best available science" and considered the

[48] Further discussion about Storm-Induced Erosion is in **Appendix SW-1**.

[49] For further discussion on sediment supply, see "Hazard – Sediment Deficiency to Beaches" in "4.10.7.2 P3 Operation".

project timeframe, risk tolerance, extreme events, and changing shorelines. The proposed project is not a critical facility that warrants protection from flooding beyond the standard 1-percent annual chance event, and initial results of coastal storm modeling shows no inundation of the site during a 100-year storm with 3.3 feet of SLR (as shown in **Soil & Water Resources Figure 12** and **Figure 13**). FEMA flood mapping shows similar results (see **Soil & Water Resources Figure 5**) of no inundation at the site during a 1-percent chance annual event.[50]

CoSMoS 3.0 currently does not include long-term projections of shoreline changes, but this information will be included in the full suite of results scheduled for release in summer 2016. This section of the shoreline does not appear to be at high risk of erosion, as suggested by the site-specific characteristics of the beach and no recorded damage to the MGS facility during the two strongest El Niño cycles on record. The adjacent beach width has become wider over the past 60 years, and sediment supply is not expected to decrease during project lifetime. For these reasons, from **Soil & Water Resources Table 3** staff **expects** that **coastal flood risk would be low during the 30-year lifespan** of the proposed project even with uncertainties of hazard modeling and rate of future SLR.[51] Staff will refine its assessment of this risk after CoSMoS 3.0 releases long-term coastal evolution projections.

Again, staff's SLR analysis focuses on the proposed 30 years of P3 commercial operation. This timeframe applies to the anticipated operating life of the proposed P3 project if approved, but does not necessarily coincide with its useful life. A variety of factors could result in facility closure, including, but not limited to, economic conditions, irreparable damage, or functional obsolescence. Condition of Certification **COM-15** (see the **Compliance Conditions** section of this PSA) anticipates eventual facility closure by requiring a Provisional Closure Plan and Estimate of Permanent Closure Costs. This plan described the closure process (including demolition, site remediation, and contingencies) and is developed during the start of commercial operation with updates every five years. If a project owner initiates but then suspends closure activities, the Energy Commission may initiate correction action against the project owner to complete facility closure, and the owner remains liable for all associated costs. Because Condition of Certification **COM-15** ensures the demolition of the facility following permanent closure, from **Soil & Water Resources Table 3** staff concludes that **long-term, "legacy" coastal flood risk is zero**.

Conversely, P3 could potentially operate for longer than expected. Staff understands that a lifespan of 30 years for a "typical" natural gas power plant is generally accepted within the power industry, and that actual useful life depends on need, location, maintenance investments, partial load cycling operation and frequency of starts and

[50] Although similar, mapping results from FEMA and CoSMoS do not exactly agree. These discrepancies stem from the differing characteristics of each tool, as described in the "Hazard Zone Mapping" discussion of **Appendix SW-1**.

[51] On May 26 2016 the CPUC approved a 20-year contract between SCE and NRG for gas fired generation at P3. Staff's review of the proposed project is conducted independent of the CPUC's approval of this underlying contract. The CPUC found that "during the term of the contract and the expected life of the plant, the risk of coastal flooding has not been shown to compromise the reliability of the proposed project".

stops. If P3 continues to be economically viable after 30 years, an unlikely scenario for a fossil-fueled unit, the facility would likely require some type of equipment update or system overhaul. These types of changes would trigger submission of a Petition to Amend the Energy Commission Decision in accordance with Condition of Certification **COM-10**. 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.

Analysis of coastal flood risks for extended operations is beyond the scope of this staff assessment but is worth mentioning with regards to Executive Order B-30-15 considering climate change in planning decisions. While permanent inundation to some extent is expected to occur gradually over the long-term, SLR projections after 2050 become increasingly more uncertain and by 2100 uncertainties are large. The most significant threats to California's shoreline over the next few decades will continue to be short-term episodic events, but the impacts of climate change on the P3 site after 2050 is unclear. Timing is imprecise and the extent of impacts could potentially range from occasional nuisance flooding, to increased days of unscheduled outages, to facility closure due to irreparable damage.

MGS DECOMMISSIONING/DEMOLITION

Soil Erosion and Storm Water Control

Decommissioning and demolition activities could potentially cause impacts similar to construction activities (see the "P3 Construction" subsection on page 4.10-21). The applicant states that neither MGS decommissioning nor MGS demolition would involve excavation of underground infrastructure or substantial soil disturbance activities. The laydown and staging areas used during P3 construction would continue to be used during decommissioning and demolition as needed, implementing standard BMPs similar to those used for construction. BMPs, as needed and as appropriate, could include sediment control measures and tracking control measures (PPP 2015c, PPP 2015y §§1.4 and 4.11.2).

Staff agrees these measures are appropriate. Demolition activities, in particular, are subject to requirements of the Construction General Permit.[52] Although MGS demolition does not propose excavation or substantial soil disturbance totaling more than one acre, the proposed demolition activities might be considered part of a larger common plan that includes P3 construction. Condition of Certification **SOIL&WATER-1** requires the construction SWPPP to include demolition activities of MGS Units 1 and 2, unless documentation from the SWRCB or the LA RWQCB is provided that shows the NPDES Permit is not required for proposed demolition activities.

[52] The Construction General Permit (SWRCB Order No. 2009-0009-DWQ) covers any construction or demolition activity, including clearing, grading, excavation, or other land disturbance (except operations that result in disturbance of less than one acre of total land area and which are not part of a larger common plan of development or sale).

Even if the SWRCB or the LARWQCB determines that MGS demolition activities are not required to comply with the NPDES Permit, the applicant proposes to develop and implement a Demolition Hazardous Building Materials Management Plan and a Demolition Waste Management Plan (PPP 2015y §4.14.2). Other conditions of certification in the **Waste Management** section of this PSA address wastes, including cleanup of all spills of hazardous substances.

Because no substantial soil disturbance activities would occur and implementation of BMPs would continue through MGS decommissioning and demolition, the impacts of soil erosion and storm water runoff would be **less than significant**.

Wastewater Management

Wastewater generated during decommissioning and demolition would include sanitary waste, storm water runoff, and liquid wastes. Wastewater that is not properly disposed could potentially contaminate groundwater through soil infiltration, as well as a nearby water body through direct discharge or contact runoff.

The applicant states that all wastewater related to decommissioning and demolition would be managed according to appropriate LORS. Hazardous wastewater would be collected by a licensed hazardous waste hauler for disposal at a licensed hazardous waste facility. Sanitary waste would be handled either by portable toilet facilities and/or the existing MGS septic system. Storm water runoff would be managed by the existing MGS storm water collection system, and standard BMPs similar to those used for construction would be implemented to manage various liquid wastes. BMPs relevant to decommissioning and demolition activities and handling of wastewater would include:

- Non-storm Water Management - water conservation practices; vehicle and equipment cleaning, fueling, and maintenance, and concrete curing.
- Waste Management - material delivery and storage, material use, stockpile management, spill prevention and control, solid waste management, hazardous waste management, concrete waste management, and septic/sanitary waste management.

Staff concludes that BMPs during decommissioning and demolition would minimize impacts on water quality through erosion control and wastewater management. Both the existing MGS storm water collection system and the existing MGS septic system are currently operating under project-specific Water Board permits.[53] Portable toilet facilities would be serviced by a contracted and permitted sanitary service. These permits specify discharge prohibitions, effluent limitations, and monitoring and reporting requirements to show that minimum water quality standards are achieved. Because MGS decommissioning and demolition activities would be implement appropriate BMPs, and discharges of storm water runoff and septic waste are regulated under Water Board permits, the impacts of wastewater on soil and water resources would be **less than significant**.

[53] LARWQCB Order No. R-4-2008-0087 (for the onsite sewage treatment system) and Order No.R4-2015-0201 (for the discharge of once-through cooling water, metal cleaning wastes, low volume wastes, and storm water).

Groundwater Quality

Groundwater quality impacts could occur if decommissioning or demolition activities allow contaminants to reach groundwater, either directly (when excavation reaches groundwater level) or through soil infiltration. The applicant states that neither decommissioning nor demolition activities intend to excavate and remove any buried conduits or pipes. Existing MGS buried conduits and piping would be abandoned in-place, blocked, and sealed with a cement grout at entrance, exit, and manhole access locations to preclude water entry and potential pathways to subsurface discharge.

Because no substantial soil disturbance activities would occur and implementation of BMPs would minimize or eliminate pollutant spills that could potentially infiltrate to groundwater, the impacts of MGS decommissioning or demolition on groundwater quality would be **less than significant**.

Surface Water Quality

As discussed above, soil erosion, storm water runoff, and wastewater discharges during MGS decommissioning or demolition would not significantly impact the water quality of nearby water bodies. However when once-through cooling of Units 1 and 2 cease, reduced flows could potentially impact the water quality of the Edison Canal or the discharge to the ocean. Although elimination of once-through cooling for MGS will occur irrespective and independent of P3 approval, staff analyzed impacts of MGS decommissioning because it was included in the project description.

Edison Canal

Detrimental water quality in a marine harbor can be avoided by reducing the potential sources of pollutants and maintaining an optimal flush rate. If pollutant concentrations are allowed to increase above critical levels, then water quality can degrade. Adequate flushing and water circulation within a marina improves water quality, reduces or eliminates water stagnation, and helps maintain biological productivity and aesthetics. MGS decommissioning could theoretically degrade water quality of the Edison Canal and Channel Islands Harbor by reducing flushing and water circulation.

Flushing

The flush time of a harbor is basically the time needed to remove or reduce (to a target concentration) a dissolved or suspended contaminant. In other words, it is how fast water in the harbor is mixed with “new” water from the ocean. When a single number (e.g. 10 days) is given as the flushing time of a body of water (e.g. marina basin, harbor, or estuary), this number represents an average time for flushing and replacement for the entire body of water[54]. The water exchange rate is affected by many factors such as harbor configuration, local tidal range, wave climate, and weather conditions. Depending on the geographical location, one or more of these variables can dominate the water exchange properties of a harbor at any given time.

[54] Residence time of a contaminant in a marina basin can range from zero days at the ocean boundary to as much as several weeks within the marina basin at secluded locations or where in-water structures prevent water from circulating.

Recognizing the importance of marina flushing in efforts to minimize nonpoint source pollution in coastal waters, the U.S. Environmental Protection Agency (EPA) provides guidelines for marina flushing management measures. It identified BMPs as illustrative examples of flushing guidelines in different coastal regions and primarily applies to new or expanding marinas. Although there is no specific guideline for marina basins in Southern California, EPA guidelines for southeastern and northwestern United states suggests flushing reductions (the amount of conservative substance[55] that is flushed for the basin) ranging from 70 percent to 90 percent over a 24-hour period to maintain water quality (USEPA 1993).

Harbor Circulation Study

A circulation study of Channel Islands Harbor (EIC 2003) was conducted in 2003 to define circulatory conditions, gauge the ability of enhanced circulation to affect and reduce bacteria exceedances, and determine the means of enhancing circulation. The study was part of a larger effort, at the time, to address exceedance of water quality standards for bacteria at the two small, adjacent beaches located inside the Channel Islands Harbor. Bacteria sampling and testing, water current measurements, and a dye study was conducted in support of the circulation study. Staff focused on the study's analysis of dominant factors that affect the harbor's circulation: tidal currents, MGS pumping flows, and wind-induced currents.

To examine the roles that these three factors play, the study used the RMA-2 model, a two-dimensional numerical hydrodynamic model developed by the U.S. Army Corp of Engineers. Results of the circulation analysis indicated that tidal currents are dominant and MGS pumping[56] flows are secondary. During ebb currents (falling tide), MGS pumping reduces the velocity of harbor water through the harbor entrance toward the ocean. Conversely, the velocity of flow currents (rising tides) are increased into the harbor entrance by approximately 12 percent compared to tidal currents alone. The study states that even though the circulation is better relative to conditions with tides only, circulation at the two small beaches is still relatively poor compared to circulation at the harbor entrance channel area (EIC 2003). In other words, MGS pumping has a minor effect in water circulation.

Staff's Simplified Estimate

The scope of the Harbor Circulation Improvement Study did not include flush time[57], so staff attempted to estimate average flush time for the entire system (Channel Islands Harbor, Mandalay Bay marina, and Edison Canal) using a simple model. In **Appendix SW-3**, staff compared marine harbor flush rates with and without flows induced by once-through cooling of MGS Units 1 and 2. Staff notes that calculated values of flush times with MGS pumping assume that all four pumps operate continuously and at full capacity. This in turn would imply that MGS generates power continuously, which is not accurate as explained below. MGS only produces a small fraction of its total maximum

[55] These are substances that do not decay, so the concentration is a function of dilution.

[56] Modeling simulations assumed MGS operating with all pumps on producing a pumping rate of 253 million gallons per day.

[57] Instead, the study modeled contaminant dispersal at the two beaches.

capacity of power generation, so its actual contribution to marina flushing is limited to the number of hours it is in operation. Staff also acknowledges that the calculated flush times do not adequately represent conditions of the harbor system, because the model used by staff is far too simple to apply to such a complex system (consisting of an elongated harbor with one entrance, a marina with multiple segments, and a non-navigable canal over two miles long) with areas of restricted circulation. The use of simplified models in such cases can greatly underestimate flush times (NOAA 2004).

Despite this weakness, staff's intention is to estimate relative flush times (with and without MGS pumping) knowing that the calculated values are underestimations, possibly by a very large margin. Results were evaluated knowing that actual flush times would be longer than the calculated values. Even with these underestimations, as discussed in **Appendix SW-3**, staff made the following two important conclusions:

1. Tidal currents alone do not provide adequate flushing. The EPA guideline recommends a flush time of one day to "refresh" from 70 perfect to 90 percent of the total volume of water. Staff calculations show that the one day flush time would, at best, refresh 15 percent of the water. Using the ideal mixing assumptions, flush times calculated to reach 70 percent and 90 percent are 8.2 days and 15.6 days, respectively. Actual flush times are expected to be longer than these calculated values.

2. MGS pumping improves circulation, but flush times are still well below EPA guidelines. Using ideal mixing assumptions, staff calculations show that MGS pumping might improve flush times by, at best, 40 percent. This is a relative comparison and actual flush times are expected to be longer than calculated values.

MGS Capacity Factors

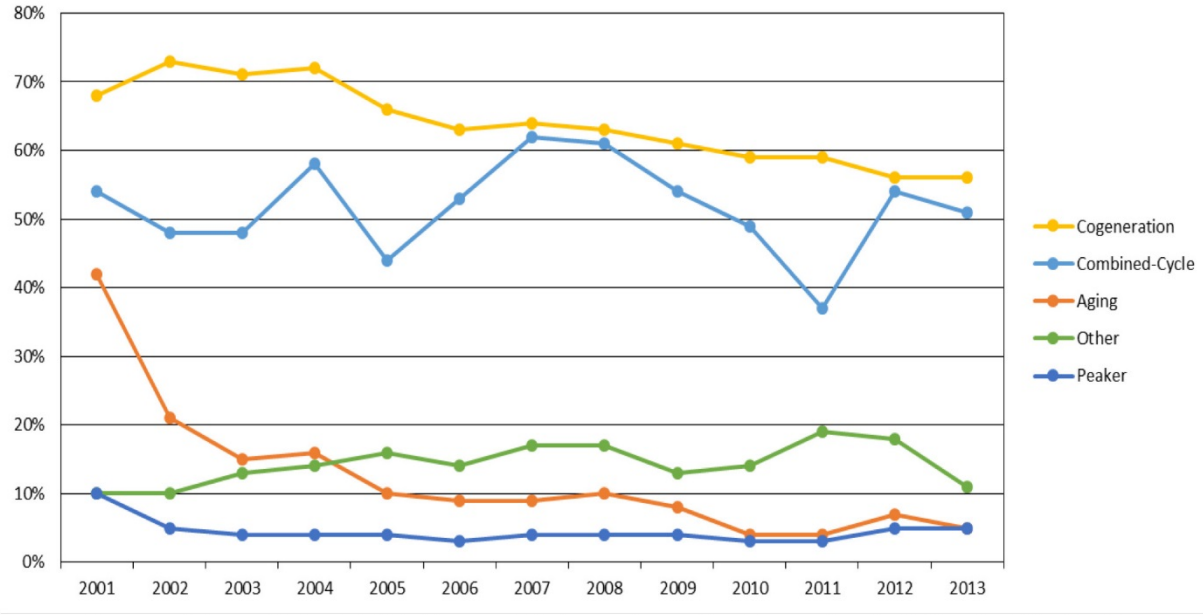
The capacity factor of a power plant is the ratio of its actual output over a period of time, to its potential output if it were possible for it to operate at full nameplate capacity continuously over the same period of time. This ratio, typically expressed as a percentage, indicates a facility's level of use. As shown in **Soil & Water Resources Figure 14**, California had a sharp decline in generation from aging power plants[58], such as MGS, which began a trend that continued as more modern fossil-fueled and renewable plants were brought online. Eventually the capacity factors of these aging plants became as low as peaking generators, on average operating at a 5 percent capacity factor in 2013, compared to a 42 percent capacity factor in 2001. Also shown in **Soil & Water Resources Figure 14**, the combined use of MGS Units 1 and 2 follows the same downward trend of aging power plants in the state.

The capacity factor data illustrate the overall utilization of the total MGS capacity, but to understand the operating profile of the MGS it is also important to note the variability in unit loads. The California Independent System Operator (CAISO) will often take advantage of the MGS' low minimum operating level and its ramping capabilities and

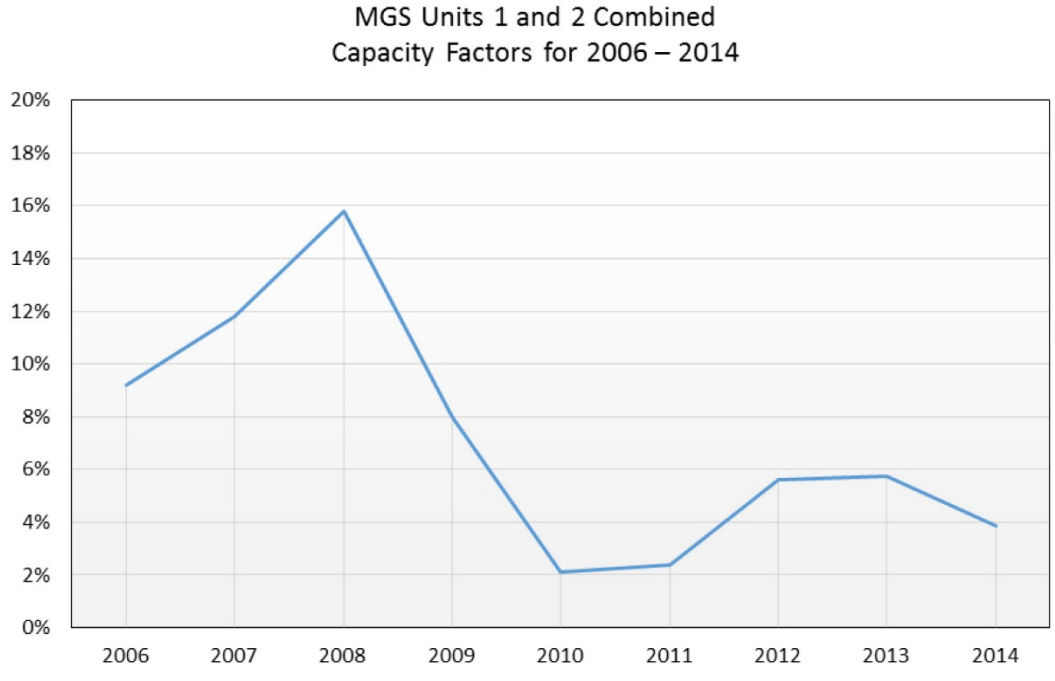
[58] "Aging" power plants are those plants built prior to 1980 and are composed almost exclusively of steam turbines that use once-through cooling technology. Due to air quality and environmental concerns, aging power plants are being phased out or repowered with cleaner, more efficient combustion turbine technology. There were 27 of these aging plants in 2001, and by 2013 there were 19 still operational.

SOIL & WATER RESOURCES - FIGURE 14

Puente Power Project – Comparison of Capacity Factors



(Source: Nyberg, Michael. 2014. Thermal Efficiency of Gas-Fired Generation in California: 2014 Update. California Energy Commission. CEC 200-2014-005.)



(Sources: GEN 2011, PPP 2015c)

operate the MGS at minimum loads to meet existing and anticipated electrical reliability needs. **Soil & Water Resources Figure 15** shows that average loads have generally been well below maximum loads, and for the majority of the year MGS does not generate power. There are four 44,000–gallon-per-minute (gpm) pumps serving MGS Units 1 and 2, two pumps for each unit (PPP 2015c). When the units are operating, the pumps are on; otherwise, the pumps are off.[59] As a result, the pumps do not operate for most of the year.

Annual capacity factors from 2010 to 2014 ranged between 2.1 percent and 5.7 percent, with a five-year average of 3.9 percent (see **Soil & Water Resources Table 7** below). This is a considerable drop from the previous year period, from 2006 to 2010, which had an average capacity factor of 9.4 percent.

Soil & Water Resources Table 7
MGS Recent Water Use and Capacity Factors

	Potable Water Use (acre-feet)	Ocean Water Inflow (acre-feet)	Capacity Factor[1] (%)
2010	38.6	47,753	2.05
2011	48.4	64,031	2.36
2012	76.5	86,015	5.59
2013	87.8	122,354	5.74
2014	58.2	74,007	3.87
Five Year Average	61.9	78,832	3.92

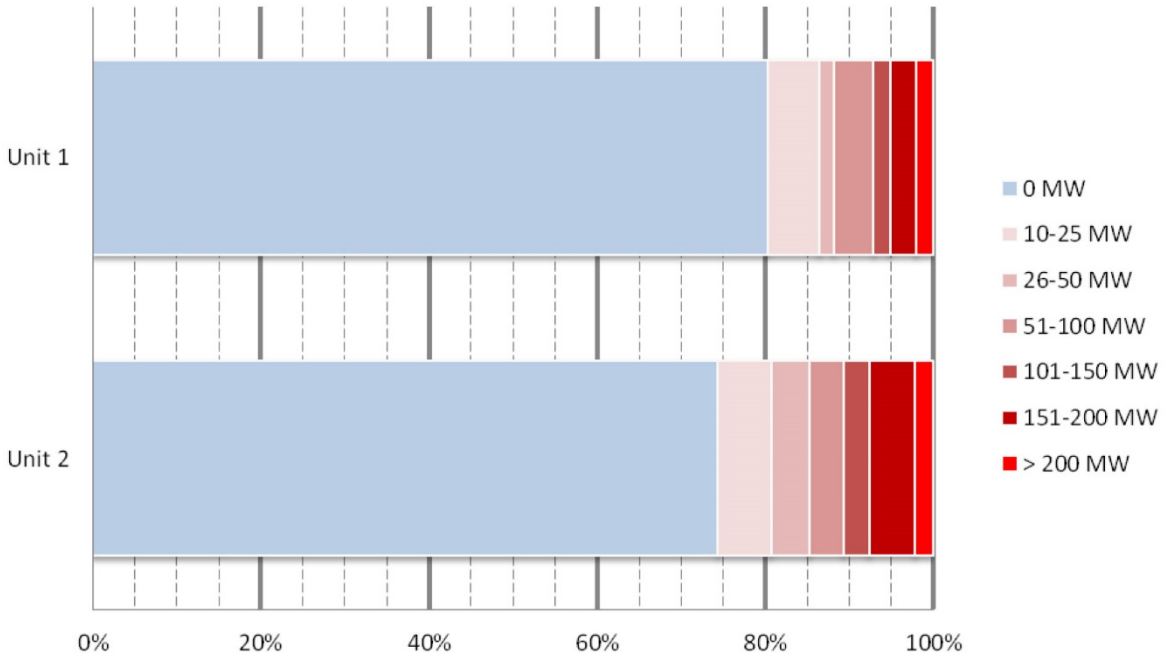
(Source: PPP 2015a Table 4.15-3, PPP 2015c)
Note 1: Capacity factor based on net megawatt-hours of MGS Units 1 and 2 out of total maximum megawatt-hours possible.

Discussion

Staff concludes that the main cause of potential water stagnation is the complex configuration of the harbor and marina, which hinders the circulation of water. Although estimates from the Harbor Circulation Improvement Study show MGS pumping increases flows into the harbor during rising tides, it found that pumping at full capacity was only a minor improvement to water circulation within the harbor. Staff's simplified estimate of average flush time for the entire system (Channel Islands Harbor, Mandalay Bay marina, and Edison Canal) concluded that tidal currents alone do not provide adequate flushing and that actual flush times are still well below EPA guidelines even with all four MGS pumps operating continuously and at full capacity.

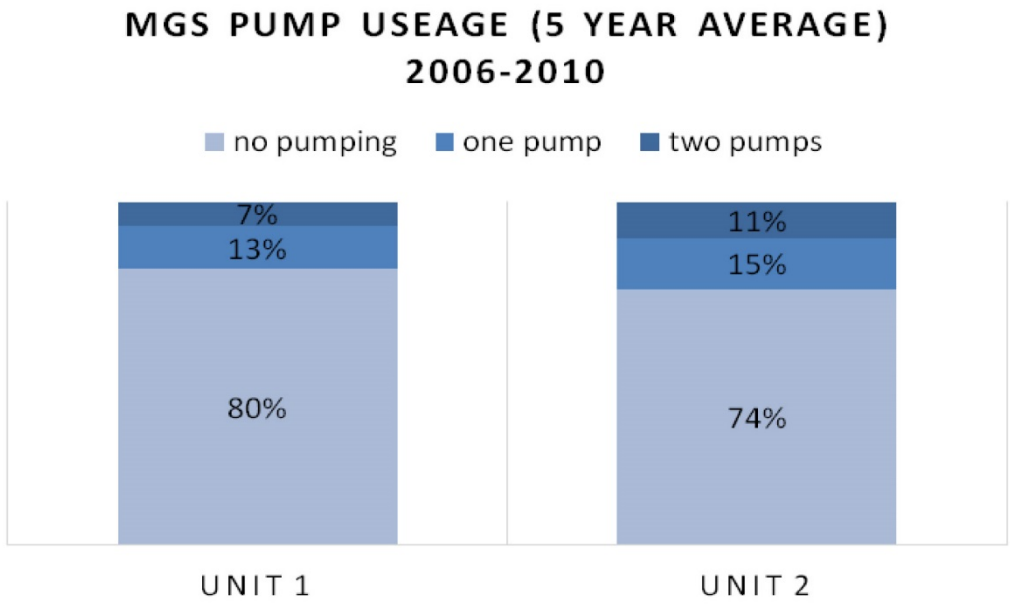
In reality, MGS only produces a small fraction of its total maximum capacity of power generation. Because MGS cooling pumps do not operate when the facility is not producing power, its contribution to marina flushing is limited to the number of hours it is in operation. Its downward trend of energy production has decreased the amount of cooling water pumped over the past ten years or more. Staff considers the years since

[59] MGS Unit 3 is served by a 3,200-gpm pump. MGS Unit 3 does not maintain a minimum flow to circulate service water when not producing power (PPP 2015c).



(Source: GEN 2011)

Notes: Units are rated at 215 MW each.
Five year average capacity factor of 9.4%.



Two pumps service each unit. Pumps do not operate when the units are not directly engaged in power-generating activities or critical system maintenance. Average operating profile of pumps is based on the average operating profile, assuming each unit operates one pump to generate less than 100 MW and two pumps operate to generate 100 MW or more.

2010, when the facility's capacity factor has remained less than 6 percent (as shown in **Soil & Water Resources Table 7**), to be the "baseline physical condition" by which staff determines whether the impact is significant. Because MGS pumping is only a minor contribution to flush time and the pumps do not operate for most of the year, any impacts from shutting down the pumps are **less than significant**.

Discharge to the Ocean

Although MGS Units 1 and 2 would no longer discharge process wastewater to the retention basins after decommissioning, the basins would be reused to handle storm water and process wastewater from P3 and MGS Unit 3 as well as storm water from the area associated with MGS Units 1 and 2. Theoretically speaking, a facility that converts from once-through cooling to closed-cycle cooling might have difficulty meeting effluent limitations without the benefit of dilution from once-through cooling water volumes. The SWRCB included this potential impact in its CEQA analysis when adopting California's *Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling* (SWRCB 2010a). SWRCB analyzed effluent data for an example facility[60] to assess whether facilities that withdraw water from enclosed bays and estuaries[61] may experience conflicts with effluent limitations as a retrofitted facility.

However, this does not represent the P3 project because only combustion turbine generators are proposed and the MGS steam generators would be decommissioned. Process wastewater from steam turbine generators can potentially contain arsenic, copper, nickel, and zinc. The process wastewater from P3's gas combustion turbine generator would consist of reject from the first pass reverse-osmosis unit, clear oil-water separator effluent, and evaporative cooler blowdown. This wastewater would be discharged to the existing lined MGS basins, tested, and discharged to the ocean in accordance with the MGS NPDES Permit Number CA0001180. The constituents regulated in the existing NPDES permit are expected to be nondetectable or not present in process wastewater of P3, therefore no compliance problems are anticipated for the proposed project (PPP 2015a §2.7.6.1, Table 2.7-6).

The NPDES permit specifies discharge prohibitions, effluent limitations, and monitoring and reporting requirements to show that minimum water quality standards are achieved. Because P3 operational wastewater discharges would be subject to federal regulatory requirements and the applicant would comply with the appropriate NPDES permit, the wastewater impacts of MGS decommissioning and demolition would be **less than significant**.

Water Supply

The source of water for both MGS decommissioning and demolition activities would be potable water provided by the city of Oxnard, delivered via an existing MGS water line. Over the three-month decommissioning period, total water use would be approximately 99,000 gallons, or approximately 0.3 ac-ft (PPP 2015c). During the 15-month demolition period, approximately 3.2 ac-ft would be used, which includes domestic water use. The

[60] Haynes Generating Station, located in Long Beach

[61] E.g. Alamitos and Mandalay Generating Stations

average use would be approximately 0.21 ac-ft per month, peaking for three months at about 0.31 ac-ft per month during removal of boiler plant equipment and structures (PPP 2015y Table 2-4).

Although this amount of water use is individually minor, when added with concurrent water use during other phases of the proposed project, it could potentially impact potable water supplies. Staff's evaluation of these potential impacts analyzes water use from all phases of the proposed project in the "Cumulative Impacts" subsection below (see the "Water Supply" discussion on page 4.10-70).

INDIRECT IMPACTS

Indirect impacts are effects caused by the project and occurring later in time or farther removed in distance, but still reasonably foreseeable. Indirect impacts usually result from a chain of events caused by the project, intended or not.

Growth Inducing

Each new municipal facility constructed, such as a power plant, has the potential to promote population growth in the vicinity. The resulting population increase could strain existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. The **Socioeconomics** section of this PSA discusses growth-inducing impacts, and further concludes that the construction and operation workforces would not directly or indirectly induce substantial growth or a concentration of population and the P3 project would not encourage people to permanently move into the area. Based on this information, the approval of P3 would not indirectly result in a significant increase of water and wastewater utility customers.

CUMULATIVE 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 (California Code Regulations, Title 14, section 15130).

Surface Water and Groundwater Quality

As identified in the **Executive Summary** section of this PSA, 126 projects within ten miles of the proposed P3 project have been approved, are under review, or in construction (see **Executive Summary Table 1** and **Executive Summary Figure 1**). Approximately ten of these projects, along with the proposed project, have the potential to contribute to increase local soil erosion and storm water runoff. Without the use of storm water BMPs and erosion control BMPs, these changes could incrementally increase local soil erosion and storm water runoff leading to significant impacts to the quality of receiving water bodies. By complying with all applicable erosion and storm water management LORS, including the NPDES Construction General Permit, the

proposed P3 project would avoid or substantially lessen the cumulative problem.[62] The P3 project's contribution would not be "cumulatively considerable" and, therefore, not significant.

Water Supply

Estimated potable water use for all phases of the proposed project are shown below in **Soil & Water Resources Table 8**. Annual water use peaks during the 15-month period when MGS demolition overlaps with P3 initial operations, assuming that P3 is dispatched to operate the maximum allowable hours.

Soil & Water Resources Table 8
Estimated Potable Water Use for All Phases

	P3 Construction	MGS Decommissioning	MGS Demolition	P3 Operations	Annual Total (acre-feet)
Begin End	Oct 2018 June 2020	July 2020 Sep 2020	July 2021 Sep 2022	June 2020 June 2050	
2018	0.5				0.5
2019	2.2				2.2
2020	0.6	0.3		9.5	10.4
2021			0.9	19	19.9
2022			2.3	19	21.3
2023				19	19
Phase Total	3.3	0.3	3.2		

(Sources: PPP 2015a Table 2.9-4 and §2.7, PPP 2015c, PPP 2015y Table 2-4)

CEQA requires an assessment of a proposed project's impacts on the local water supply system. Particularly, the California Water Code sections 10910-10915 require development of a Water Supply Assessment (WSA) containing specific elements related to current and projected supplies and demands of the system's service area. Proposed projects meeting certain size and water usage criteria must have a WSA prepared during the CEQA process, which is typically prepared by the water purveyor.

Based on definitions detailed in the Water Code, the proposed project does not meet the criteria to require a WSA. Specifically, the proposed project would occupy less than 40 acres, would have less than 65,000 square feet of floor area, and would use less water than a 500 dwelling unit project. To verify that a WSA is not required, staff contacted the water purveyor (the city of Oxnard) (CEC 2015n) who confirmed a WSA is not needed.

[62] CEQA also allows the lead agency to determine that a project's contribution to a cumulative impact is not significant "if the project will comply with the requirements in a previously approved plan or mitigation program which provides specific requirements that will avoid or substantially lessen the cumulative problem … within the geographic area in which the project is located." (California Code of Regulations, Title 14, section 15064(h)(3).)

In light of the project's use of potable water for construction, decommissioning, and demolition activities[63], staff analyzed whether this use would adversely impact the city's potable water supplies. Because water would be supplied through the existing water connection on the MGS property, staff considered P3 water use in relation to current potable water use at MGS. During the past 5 years, MGS' annual potable water consumption has averaged approximately 62 afy, with a range from approximately 38 afy to 88 afy. This variability in water use is largely due to the variability of the actual number of hours the facility generated power, as reflected in the capacity factor (see **Soil & Water Resources Table 7** above). These power units at MGS no longer operate as baseload power generation and currently operate as peaking generators dispatched by California Independent System Operator (CAISO) during periods of high load demand (GEN 2011).

Because the proposed project would essentially replace the existing MGS (where the annual potable water consumption averaged 62 afy over the past five years), the net result would be a decreased demand of potable water compared to current demand at the Mandalay property. As shown on **Soil & Water Resources Figure 16**, net use of potable water peaks when P3 construction coincides with existing MGS operation. However, potable water use at MGS has varied over the years, so actual net use during this period is difficult to predict.

Potable water use during construction would be temporary, and this amount is small compared to overall MGS potable water use. In addition, decommissioning of MGS Units 1 and 2 would significantly decrease the potable water demand to the MGS property for the long-term. For these reasons, the use of potable water for the proposed project would not adversely impact the city's potable water supplies. Staff recommends Condition of Certification **SOIL&WATER-5** to place annual limits on potable water use and to address possible exceedances prior to reaching the maximum limit.

ENVIRONMENTAL JUSTICE

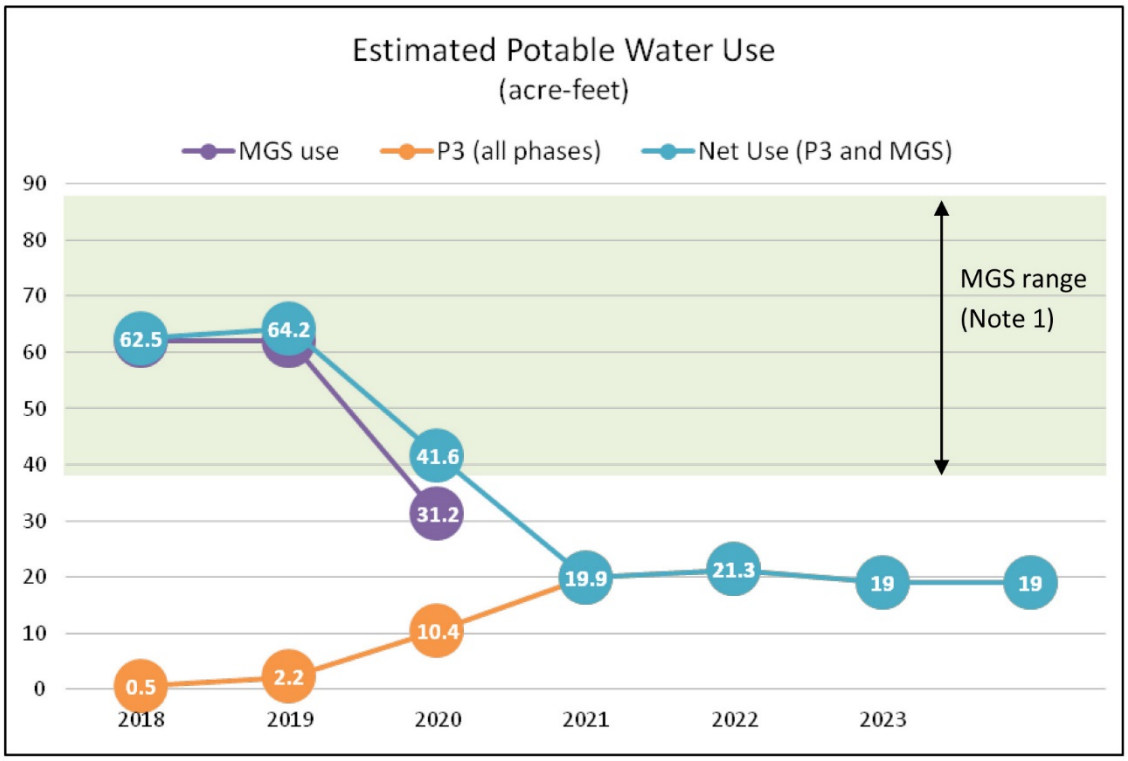
As discussed in the **Socioeconomic Resources** section of this PSA, the minority population in the six-mile buffer around the proposed project constitutes an environmental justice (EJ) population as defined by *Environmental Justice: Guidance under the National Environmental Policy Act* issued by the federal Council of Environmental Quality. **Socioeconomics Table 3** shows that the cities of Oxnard and Port Hueneme have below-poverty-level populations significant enough to be considered EJ populations, and **Socioeconomics Figure 1** shows the presence of an EJ population based on race and ethnicity within the six-mile radius.

Additionally, much of the land located east of the P3 site has agricultural uses (see **Soil & Water Resourced Figure 3**). There is a number of farm workers within the vicinity of the proposed site at any given time. Ventura County's agricultural commissioner estimates that 17,000 to 24,000 immigrant workers come to the county each year at

[63] Although many activities related to construction, decommissioning, and demolition are suitable for non-potable water use, the infrastructure is not in place to provide recycled water to the P3 site. (See discussion on "California Constitution, Article X, Section 2" below under "4.10.8 Compliance with LORS and State Policies.)

SOIL & WATER RESOURCES - FIGURE 16

Puente Power Project – Estimated Potable Water Use



	Construction	Decommission	Demolition	Operations[2]	P3 Total	MGS	Net[3]
2018	0.5				0.5	62	62.5
2019	2.2				2.2	62	64.2
2020	0.6	0.3		9.5	10.4	31.2	41.6
2021			0.9	19	19.9		19.9
2022			2.3	19	21.3		21.3
2023				19	19		19
2024				19	19		19

(Sources: PPP 2015a Table 2.9-4 and §2.7, PPP 2015c, PPP 2015x Table 2-4)

Notes:

1. MGS annual water use over the past five years ranged between 39 ac-ft in 2010 and 88 ac-ft in 2013 (PPP 2015a Table 4.15-3). Table above uses the five year average of 62 ac-ft to estimate future use.
2. Average annual use takes downtime into account. It is therefore based on the average daily use attenuated by an average annual capacity factor of 30 percent.
3. This represents potential maximum water use. Actual water use would depend on the ambient temperature, capacity factor, and operating profile.

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peak growing seasons (COO 2011). Due to the presence of an EJ population among residents and farm workers, this analysis must identify whether the construction and operation of the proposed P3 facility and the demolition of MGS could have significant, unmitigated impacts or disproportionate impacts on an EJ population.

The preceding subsections found the proposed project would not cause impacts to groundwater quality or potable water supplies, and impacts on surface water quality would be mitigated to less than significant. With respect to flood risks, staff's preliminary evaluation suggests that present-day flood risks are low and future flood risks could be between low and moderate.[64] This subsection compares risks and impacts on the EJ populations with respect to the risks and impacts on the overall population within the project area.

Impacts on Surface Water Quality

Surface water quality could potentially affect EJ communities due to:

- cumulative risks due to exposure from pollution sources in addition to the proposed project;
- unique exposure pathways and scenarios (e.g., subsistence fishers, farming communities); and
- sensitive populations (e.g., individuals with poor diets, limited or no access to healthcare

Water quality can be affected by sedimentation caused by erosion, by runoff carrying contaminants, and by wastewater discharge of pollutants (point-source pollution). As land is developed, the new impervious surfaces can send an increased volume of runoff containing oils, heavy metals, and other contaminants (non-point source pollution) into adjacent water bodies. To mitigate potential impacts to less than significant, compliance with project-specific LARWQCB permits would ensure minimum water quality standards are met. Specifically, the existing MGS collection system mitigates process wastewater and storm water (LARWQCB Order No.R4-2015-0201) and the existing MGS septic system mitigates sanitary wastewater (Order No.R-4-2008-0087). P3 wastewater would be managed by these existing MGS wastewater systems.

Because P3 wastewater would discharge to the ocean, this effluent would not impact water supply sources. Treated discharges from the septic system would eventually enter the groundwater. Because the city blends imported water with local groundwater to supply municipal potable water, this effluent could potentially affect EJ communities. However, no public water supply wells are within one mile of the MGS property (PPP 2015a §4.15.1.4). Also, wells down gradient of the P3 site are located in an area where groundwater levels have dropped due to excessive pumping. To limit continued groundwater pumping of this coastal area, UWCD supplies potable water to wholesale customers on the Oxnard Plain (City of Oxnard, Port Hueneme Water Agency, the

[64] Coast flood hazards, currently in development and considered to be the best information available. Staff will review FEMA's updated information to refine the assessment of present and future flood risks for the Final Staff Assessment.

Naval Base, and a number of small mutual water companies) via the Oxnard-Hueneme pipeline (CH2M 2004). Rather than extracting groundwater, the city's GREAT Program injects recycled water into this area to fight ongoing overdraft and seawater intrusion (see 4.10.5.5 "Local Water Supplies"). Because P3 wastewater discharges would not affect potable water supplies, mitigated water quality impacts would not disproportionately affect EJ populations.

Flooding Risks

Community flooding, regardless of its cause, can result in structural damage, property loss, exposure to contamination or toxic substances, and impacts to public health and safety. Low-income households are less likely to afford emergency preparedness materials, buy insurance policies, and obtain needed building improvements. Renters are also less likely to reinforce buildings and buy insurance because the decision to make major improvements and financial gains typically lies with the property owner. Emergency response crews may be unable to communicate with non-English speakers. The ability to remain safe or evacuate high-risk areas during a flood event is largely affected by factors such as quality of residential structures, access to transportation, availability of emergency supplies, effective service by emergency responders, and exposure to environmental hazards (CEC 2009).

Although multiple factors raise the vulnerability of EJ communities to a flood event and increase the likelihood of disproportionate impacts, the proposed P3 project would not cause these communities to flood nor exacerbate flood impacts during a flood event. For this reason, the proposed project would not individually or cumulatively contribute to disproportionate flooding impacts to EJ populations.

COMPLIANCE WITH LORS AND STATE POLICIES

CLEAN WATER ACT

Staff has determined that the proposed project would satisfy the requirements of CWA Section 402 by complying with applicable NPDES permits from the SWRCB. A Construction General Permit would regulate storm water discharges during construction of P3 and demolition of MGS. Compliance with two additional NPDES permits would be required, if applicable, to specifically regulate wastewater discharge from hydrostatic testing and construction dewatering. Conditions of Certification **SOIL&WATER-1** and **SOIL&WATER-2** would inform the CPM of appropriate BMP implementation and any issues regarding these permits. Requirements of CWA Section 401 would be met during commercial operations by complying with Waste Discharge Requirements issued by LARWQCB to regulate storm water and process wastewater to the Pacific Ocean and domestic wastewater to a subsurface septic system. Condition of Certification **SOIL&WATER-4** would inform the CPM of any issues regarding these wastewater discharges.

THE RESOURCE CONSERVATION AND RECOVERY ACT

The proposed project would comply with RCRA by preventing surface and groundwater contamination through proper identification, handling, and disposing of hazardous wastes. Condition of Certification **WORKER SAFETY-2** would require a Hazardous

Materials Management Program that addresses hazardous materials onsite including handling, transportation, tracking, usage, and storage. Several conditions of certification in the **Waste Management** section of this PSA ensure the project site is investigated and any contamination identified is remediated as necessary, with appropriate professional and regulatory agency oversight.

CALIFORNIA CONSTITUTION, ARTICLE X, SECTION 2

The California Constitution, Article X, Section 2 requires that the water resources of the state be put to beneficial use to the fullest extent possible and states that the waste, unreasonable use or unreasonable method of use of water is prohibited. The use of potable water for activities suitable for non-potable water use (e.g. construction, decommissioning, and demolition) when a water source of lower quality is available is inconsistent with California Constitution, Article X, Section 2.

Although the city's AWPF began producing recycled water in April 2015, this early phase of the GREAT program currently provides recycled water to the city's golf courses and to agricultural users primarily in the southern Oxnard Plain. The applicant's proposal to use potable water for construction, decommissioning, and demolition activities is reasonable because the infrastructure is not in place to provide recycled water to the site in a manner that is economically feasible. The closest point of connection to the city's Recycled Water Backbone System is approximately four miles from the site, near Fifth Street and Ventura Road. In addition, the amount of potable water proposed is minimal and its use for these purposes would be temporary.

CALIFORNIA WATER CODE

Section 13260

Through the establishment of waste discharge requirements by LARWQCB, Pacific Ocean water quality is maintained. The proposed project would use the existing MGS collection system (for process wastewater and storm water) and the existing MGS septic system, which are both currently operating under project-specific Waste Discharge Requirements issued by LARWQCB. Condition of Certification **SOIL&WATER-4** would inform the CPM of any issues regarding these wastewater discharges.

Section 13550

California Water Code (CWC) Section 13550 requires the use of recycled water for nonpotable uses if recycled water is available. Although many activities related to construction, decommissioning, and demolition are suitable for non-potable water use, the infrastructure is not in place to provide recycled water to the P3 site. Although the city began producing recycled water in April 2015, this early phase of the program currently provides recycled water to the city's golf courses and to agricultural users primarily in the southern Oxnard Plain. The closest point of connection to the city's Recycled Water Backbone System is approximately four miles from the P3 site, near Fifth Street and Ventura Road. Because the infrastructure is not in place, the use of recycled water is not economically feasible for the limited quantities used by P3.

Sections 10910-10915

These sections of the CWC require an agency managing a public water system to prepare a water supply assessment (WSA) for certain defined development projects subject to CEQA. The proposed project does not meet the definition of "project" as defined in these sections of the Water Code, therefore a WSA is not required (see the "Water Supply" discussion in "4.10.7.5 Cumulative Impacts").

CALIFORNIA CODE OF REGULATIONS

Title 20, Sections 1301 – 1313

These data collection regulations known as Quarterly Fuel and Energy Reports (QFER) are to obtain necessary information in order for the California Energy Commission to develop policy reports and analyses related to energy. Power plant owners are required to periodically report specific operational data to the California Energy Commission, including water supply and water discharge information. Through compliance with Conditions of Certification **SOIL&WATER-4** and **SOIL&WATER-5**, in addition to the required QFER submittals, the proposed project would provide the required data.

CITY OF OXNARD 2030 GENERAL PLAN

California law requires each local government to adopt a local general plan that reflects the goals and policies that guide the physical development of land within its jurisdiction. The City of Oxnard's general plan includes specific policies to achieve established goals, which are organized by category topics. The analysis below lists policies within the categories of Sustainable Community (SC), Environmental Resources (ER), and Safety and Hazards (SH) that are relevant to soil and water resources.

Staff's conclusions were made using the Oxnard 2030 General Plan adopted October 2011. One week prior to the publication of this PSA, the Oxnard City Council voted 5-0 to approve an Amendment to the city's General Plan prohibiting power generation facilities greater than 50 MW in areas subject to coastal hazards (which includes the MGS and P3 sites). Unless rescinded or otherwise reconsidered, the General Plan Amendment will become effective July 7, 2016. Staff will address any inconsistencies between the P3 and adopted policies arising from approval of the General Plan Amendment in the Final Staff Assessment.

Policy SC-2.3 Sea Level Rise Consideration in Decision-Making: Ensure that all planning, public works, and related decisions take rising sea level into consideration and take steps to reduce risk of damage or loss of life and property. Staff bases its sea level rise analysis on State of California Sea-Level Rise Guidance Document issued by the Coastal and Ocean Working Group of the California Climate Action Team (CO-CAT) and the Sea Level Rise Policy Guidance adopted by the California Coastal Commission (CCC). The sea level rise analysis contained in this PSA is consistent with Policy SC-2.3.

Policy ER-3.4 Reduce Impact on Harbor, Bay, and Ocean Water Ecology: Condition or comment on any applications received for dredging to control turbidity and prevent interruption with spawning or migratory cycles, condition and conduct harbor and bay

development in a manner that will result in the lowest reasonable level of contamination, monitor vessel wastes and report them to the proper agency, and continue to comment on the potential effects on ocean water quality of new development and offshore operations (oil, gas extraction, and LNG terminals) operations within the Santa Barbara Channel. P3 would not involve dredging activities and would not allow discharges to the harbor or the canal. Activities related to the construction or operation of P3 or the decommissioning or demolition of MGS would not significantly impact contamination levels in the harbor or the canal. Through compliance with applicable NPDES permits, the project would not have significant impacts to ocean water ecology. Staff concludes that the project would be consistent with Policy ER-3.4.

Policy ER-3.5 Reduce Construction Silt and Sediment: Require that construction-related silt and sediment be minimized or prohibited to minimize temporary impacts on biological resources. P3 construction activities would be subject to NPDES Construction General Permit regulatory requirements which include specific BMPs to achieve minimum water quality standards. The applicant would obtain a Construction General Permit to manage construction-related silt and sediment. Staff concludes that the project would be consistent with Policy ER-3.5.

Policy ER-5.1 Wastewater Treatment: Treat all wastewater in compliance with approved discharge permits. All phases of the proposed project are subject to wastewater discharge requirements from applicable NPDES permits. The Construction General Permit regulates both P3 construction and MGS demolition activities. During P3 operations and MGS decommissioning, permits regulate process and storm water discharges to the ocean and sanitary discharges to the onsite septic system. Conditions of Certification **SOIL&WATER-1** through **-4** would notify the CPM of issues regarding those wastewater discharges. Staff concludes that the project would be consistent with Policy ER-5.1.

Policy ER-5.7 Minimizing Paved Surfaces: Require minimization and/or permeability of paved surfaces in new developments and replacement paving, where feasible. P3 would consist of about one acre of impervious area (paved roads, paved parking areas, and built structures) with the remaining two acres covered with gravel. Storm water that does not infiltrate the P3 site would be collected by a new storm water drainage system and pumped either to the service water tank or to existing MGS storm drain system. Staff concludes that the project would be consistent with Policy ER-5.7.

Policy SH-3.2 New Development Flood Mitigation: As a condition of approval, continue to require new development to mitigate flooding problems identified by the National Flood Insurance Program and/or other expert information. Oxnard's effective FIRM dated 2010 shows that the proposed P3 site is not located within the base flood boundary or within the designated floodway. Staff concludes that the project would be consistent with Policy SH-3.2. FEMA is in the process of updating FIRMs of Ventura County. The FSA will include updated information if preliminary FIRMs are available at that time.

CITY OF OXNARD CODE OF ORDINANCES

Ordinance No. 2426 and No. 2640

Substantial improvements or proposed new development of a structure located in areas of special flood hazards, as identified by FEMA, must follow minimum standards regarding anchoring, construction materials and methods, and elevation and flood proofing. P3 is not located within a FEMA special flood hazard area and, therefore, is not subject to these requirements. Nonetheless, P3 incorporates some minimum standards, such as the use of anchored pilings and avoidance of sand dune disturbance. Staff concludes that the project is not subject to compliance.

Ordinance No. 2728

Recycled water shall be used for suitable, non-potable purposes whenever and wherever recycled water is available at a reasonable cost and of an adequate quality. The Recycled Water Master Plan identifies recycled water use areas where types of recycled water uses are mandatory. P3 is not located in a recycled water use area and the infrastructure is not in place. The use of recycled water is not economically feasible for the limited quantities used by P3. Staff concludes that the project would be in compliance.

Ordinance No. 2459 and No. 2876

The discharge of pollutants into the storm drain system or receiving waters is prohibited. All discharges of material other than storm water into the storm drain system must be in compliance with the city's NPDES permit and any other NPDES permit applicable to the subject property. All phases of the proposed project are subject to wastewater discharge requirements from applicable NPDES permits. The Construction General Permit regulates both P3 construction and MGS demolition activities. During P3 operations and MGS decommissioning, permits regulate process and storm water discharges to the ocean and sanitary discharges to the onsite septic system. Conditions of Certification **SOIL&WATER-1** through **-4** would require compliance with these permits and notification of the CPM of issues regarding discharges. Staff concludes that the project would be in compliance.

CITY OF OXNARD WATER NEUTRALITY POLICY

The Oxnard City Council established a water demand "neutrality" policy in 2008 and later reaffirmed it in 2011. Under this policy, all new developments approved within the city must offset the water demand associated with the project with a supplemental water supply. "New development" includes all planned (anticipated in the current General Plan) and any unplanned future development occurring in the city (KJC 2012).

The policy has subsequently been interpreted and applied by the City Council[65] to mean that a project that is consistent with the 2030 General Plan land uses that were included in the 2010 Urban Water Management Plan (UWMP) demand projections is eligible for city-provided water service, unless the project's water demand is substantially greater

[65] May 19, 2015 Oxnard City Council Meeting. Agenda Item No. J-3.

than the 2010 UWMP's water demand factor for that land use. Because the proposed P3 project would essentially replace the existing MGS resulting in a net decrease demand of potable water, the proposed project complies with the Water Neutrality Policy. In addition, Condition of Certification **SOIL&WATER-5** would place annual limits on potable water use and ensure compliance with the policy (see the "Water Supply" discussion on page 4.10-70).

NOTEWORTHY PUBLIC BENEFITS

The proposed project would eliminate the possibility of using ocean water for power plant cooling at this site, which protects the beneficial uses of the Pacific Ocean. In addition, P3 would use less potable water compared to MGS. The construction of P3 and decommissioning of MGS would free potable water for other uses and also reduce the discharge of wastewater to the Pacific Ocean.

RESPONSE TO COMMENTS

Generally, staff does not address in the Preliminary Staff Assessment (PSA) comments received into the docket or at workshops. But given the level of interest in the issues surrounding the proposed P3 project, staff believes including responses here will help interested parties find information in this section that will assist in a complete discussion of the issues. Staff will address additional comments received on the PSA and at workshop in the Final Staff Assessment.

INTERVENOR: CITY OF OXNARD, TN # 205930, AUGUST 31, 2015

Comment: The intervenor states that P3 should be evaluated as critical public infrastructure under worst-case coastal hazards with highest sea level rise. A figure was submitted showing that Harbor Blvd. is expected to flood under existing and 2030 scenarios.

> **Response:** The proposed P3 project is not considered a critical facility requiring additional flood protection because failure to operate during or after a major flood would not increase the severity of flood impacts nor impede the community's recovery. The potential failure of P3 would not threaten local reliability or system reliability. (See **Appendix SW-1**.) Staff's sea level rise analysis incorporated future sea level rise projections from the best available science; project timeframe and risk tolerance; storms and other extreme events; and potential changes to shorelines including beach width and dune formations. Staff concludes that coastal flood risk would be low during the 30-year project lifespan. (See "Climate Change – Coastal Flooding" in the "P3 Operation" subsection on page 4.10-49)

INTERVENOR: ENVIRONMENTAL DEFENSE CENTER, TN # 206231, SEPTEMBER 29, 2015

Comment, page 4: The intervenor states that CEC staff must ensure that the California Coastal Commission's Sea Level Rise Policy Guidance (adopted August 2015) is incorporated into the analysis, including sections on scenario-based analysis to approach sea level rise planning; storms, extreme events, and abrupt change; and sea level rise adaption planning and environmental justice.

Response: Staff bases its sea level rise analysis on the Coastal and Ocean Working Group of the California Climate Action Team (CO-CAT) guidance, as directed under Executive Orders S-13-08 and B-30-15. The CCC guidance is a valuable resource that staff uses to analyze impacts to coastal resources and application of the Coastal Act. Although each document was written for a different target audience, they are not in conflict with each other. Both documents identify the 2012 National Research Council report as the "best available science" on projected sea level rise in 2030, 2050, and 2100. Both documents also recommend similar considerations when analyzing sea level rise such as timeframe, risk tolerance, changing shorelines, and extreme events. (See **Appendix SW-1**.)

Comment, page 4: The intervenor urges the Commission to treat the proposed P3 as critical infrastructure, and to apply the heightened considerations that have been established by the Coastal Commission's Policy Guidance.

Response: The proposed P3 project is not a critical facility requiring additional flood protection because failure to operate during or after a major flood would not increase the severity of flood impacts nor impede the community's recovery. The potential failure of P3 would not threaten local reliability or system reliability. (See **Appendix SW-1**.)

Comment, Attachment A: The intervenor states that the issue of reliability at the MGS site includes the risk of sea level rise, floods, and shore land retreat (among others). Emphasis was placed on the P3 location "right next" to the existing Edison power plant, stating that if the Edison facility is damaged or destroyed then it is highly probable that P3 would also be damaged or destroyed.

Response: The joint failure of three components (e.g. the P3 and the McGrath and Mandalay 3 generation units due to a natural disaster) is sufficiently remote that the California Independent System Operator (CAISO) does not consider it a contingency for which it must plan as part of its responsibility for ensuring local reliability. (See **Appendix SW-2**.)

Comment, Attachment B: The intervenor states that any electrical generating facility that does not require once-through cooling would not be a coastal dependent facility, and would therefore be inconsistent with the development policies and priorities of the Coastal Act.

Response: Whether or not P3 is consistent with the Coastal Act is wholly a **Land Use** issue and beyond the scope of this Soil and Water Resources technical section. (See the **Land Use** section of this PSA for response to this comment.)

Comment, Attachment C: The intervenor states that a coastal hazard map prepared by the Pacific Institute in 2009 entitled *California Flood Risk: Sea Level Risk Oxnard Quadrangle* shows the P3 site within an area mapped as "Current Coastal Base Flood (approximate 100-year flood extent)" or "Sea Level Rise Scenario Coastal Base Flood +1.4 meters (55 inches)".

Response: The Pacific Institute prepared maps for the entire California coast showing coastal flood and erosion hazard zones which were prepared from their 2009 study *The Impacts of Sea-Level Rise on the California Coast*. The study used

a static (“bathtub”) model that only compares the projected higher water level to land elevation resulting in a significant oversimplification of the processes involved in flooding (see “Flood Prediction Models” in **Appendix SW-1**). The Pacific Institute report clearly states that these maps are not the result of detailed site studies, and were created to quantify risk over a large geographic area. “Local governments or regional planning agencies should conduct detailed studies to better understand the potential impacts of sea-level rise in their communities.” Staff has reviewed more site specific data from FEMA for current flood hazard zones and USGS for future scenarios of sea level rise. Based on these sources, the site is not currently located in the 100-year flood zone and is not expected to be affected by potential changes in the 100-year flood zone during its 30 years of operation.

Comment, Attachment C: The intervenor states that a plain interpretation of the best-available scientific information available to the city of Oxnard clearly indicates that development of any new or alterations to any existing electrical generating facility in the city’s coastal zone poses an immediate threat to public health, safety, and welfare, in that the approval of such application would result in potential placement of a critical infrastructure facility that would be subject to failure due to storm surge, wave run-up, erosion, or tsunami inundation.

Response: The proposed P3 project is not a critical facility requiring additional flood protection because failure to operate during or after a major flood would not increase the severity of flood impacts nor impede the community’s recovery. The potential failure of P3 would not threaten local reliability or system reliability. (See **Appendix SW-1**.) In addition, staff concludes that coastal flood risk would be low during the 30-year project lifespan. (See “Climate Change – Coastal Flooding” in the “P3 Operation” subsection on page 4.10-49)

INTERVENOR: CITY OF OXNARD (POLICE AND FIRE DEPARTMENTS), TN # 206245, OCTOBER 1, 2015

Comment: The intervenor states that the city has developed sea level rise maps for the comprehensive Local Coastal Plan update. These maps establish, at a minimum, the risk of flooding at some depth in and around the MGS and P3 facilities by any of the following: severe coast storm, heavy rain riverine flooding, and/or dam failure events. The existing coastal and riverine flooding scenarios increase during the 30-year life span of the P3 facility. Should the site be flooded and require emergency response for hazardous chemicals, fire, and/or paramedic service, the city could either not respond or would request mutual aid assistance from the county for a helicopter.

Response: For issues related to emergency services, please see the **Worker Safety & Fire Protection** section of this PSA.

PUBLIC: INFORMATIONAL HEARING, AUGUST 27, 2015

Comment: Puente plant should be evaluated as critical public infrastructure under the worst-case coastal hazard scenarios. In their testimony to the PUC they cite several times critical contingencies, critical services, and NRG's testimony itself states that the facility is an existing critical generating location.

Response: The testimony presented at the CPUC proceedings addressed the need for long-term procurement to meet local capacity requirements, and this does not directly translate to the need for heightened protection from flood damage. The proposed P3 project is not a critical facility requiring additional flood protection because failure to operate during or after a major flood would not increase the severity of flood impacts nor impede the community's recovery. The potential failure of P3 would not threaten local reliability or system reliability. (See **Appendix SW-1**.)

Comment: The U.S. Army Corps of Engineers is responsible for dredging the Ventura Harbor, which supplies the sand for the beach. Insufficient dredging of Ventura Harbor could cause the beach to narrow near the P3 project, which would reduce protection of the power plant and cause extensive erosion and flooding.

Response: The beach would continue to receive sand from the Santa Clara River which comprises the majority of overall sediment supply to the area beaches. Staff concludes that the lack of dredging at Ventura Harbor would not have a catastrophic impact to beach width at the project site. For a detailed discussion, see "Hazard – Sediment Deficiency to Beaches" on page 4.10-39 in the "P3 Operation" subsection.

Comment: The outfall concrete ditch will remain in place on the beach, open to the public as a potential safety hazard. Eventually, as the ordinary high water mark moves in with the sea-level rise, it could actually end up under jurisdiction of the California State Lands Commission.

Response: In April 2015, the California State Lands Commission (SLC) met and discussed sea level rise. A presentation was made to report on the SLC staff's activities to address sea level rise. Current efforts include a revised surface leasing application to assess the impacts of future sea level rise on their proposed projects. The information will help SLC develop appropriate and effective lease terms to address and adapt to sea level rise. The staff report, Item #119, is available on their website. (http://archives.slc.ca.gov/Meeting_Summaries/2015_Documents/04-23-15/Items_and_exhibits/119.pdf.)

Comment: The proposed project would trigger several significant environmental impacts that likely cannot be mitigated. These impacts include… significant demand for fresh water, as well as, water quality impacts from plant discharges….

Response: Operation of P3 in combination with decommissioning of MGS would result in less demand for fresh water (see the "Water Supply" discussion on page 4.10-70). Wastewater discharges are regulated to ensure water quality standards are achieved (see "Wastewater Management" in the "P3 Operation" subsection on page 4.10-27).

Comment: Decommissioning of MGS could lead to stagnation of the Edison Canal and become an issue for the residents of Channel Islands Harbor. Keeping flows through the canal needs to be taken into consideration.

Response: Because MGS pumps do not operate when MGS is not producing power, its contribution to marina flushing is limited to the number of hours it is in operation. Staff believes that the root cause of poor water circulation is the complex configuration of the harbor and marina, which were both constructed after MGS

began operations (see “Edison Canal” in the “MGS Decommissioning and Demolition” subsection on page 4.10-62).

Comment: Although NRG claims that sea-level rise isn't an issue, the Nature Conservancy, a well-known non-profit, stated in a project mapping sea-level rise in Ventura County that the power plants would be directly affected.

Response: Staff has incorporated this information as well as other studies into its analysis (see “Climate Change – Coastal Flooding” in the “P3 Operation” subsection on page 4.10-49). Further discussion about Hazard Zone Mapping is in **Appendix SW-1**.

Comment: It is unrealistic to expect the dunes to remain stable and protect the power plant. Storms are projected to magnify with climate change.

Response: Staff bases its sea level rise analysis on the Coastal and Ocean Working Group of the California Climate Action Team (CO-CAT) guidance, as directed under Executive Orders S-13-08 and B-30-15. Staff specifically considers all of the following: a range of future sea level rise projections from the best available science; project timeframe and risk tolerance; storms and other extreme events; and potential changes to shorelines including beach width and dune formations. Staff concludes that coastal flood risk would be low during the 30-year project lifespan. (See “Climate Change – Coastal Flooding” in the “P3 Operation” subsection on page 4.10-49)

CONCLUSIONS

Staff’s conclusions based on analysis of the information are as follows:

1. The proposed project would eliminate the use of ocean water for power plant cooling at this site. This protects the beneficial uses of the Pacific Ocean and is a public benefit.

2. The proposed project would use less potable water compared to MGS. The construction of P3 and decommissioning of MGS would free potable water for other uses and also reduce the discharge of wastewater to the Pacific Ocean, and is therefore a public benefit.

3. Staff regards demolition activities the same as construction activities, as described in the **Compliance Conditions** section of this PSA. Condition of Certification **SOIL&WATER-1** would reduce or avoid impacts of soil erosion and storm water runoff to surface water and groundwater quality during construction of P3 and demolition of MGS Units 1 and 2. Condition of Certification **SOIL&WATER-2** would protect water quality from the specific discharges of hydrostatic test water and construction dewatering. Condition of Certification **SOIL&WATER-3** would minimize groundwater impacts should construction dewatering occur.

4. Post-construction BMPs would reduce soil erosion impacts during operations to less than significant, and impacts on sand dunes located both onsite and offsite would be less than significant under normal operational activities.

5. P3 wastewater (process, storm water, and sanitary wastewater streams) would be managed by existing MGS wastewater systems. Potential impacts of project wastewater during operations on groundwater and surface water quality would be reduced to less than significant with compliance with MGS' existing Waste Discharge Requirements established and enforced by the LARWCQB. Condition of Certification **SOIL&WATER-4** would notify the CPM of issues regarding these wastewater discharges.

6. The city of Oxnard has sufficient potable water supplies to meet the proposed project's needs for the life of the project. Condition of Certification **SOIL&WATER-5** places an annual limit on potable water use and requires that possible exceedances are addressed prior to reaching the maximum limit.

7. The proposed project does not require a Water Supply Assessment (WSA) because it is not a "Project" as defined by California Water Code Section 10912.

8. P3 would not cause or exacerbate flooding to areas offsite and proper implementation of BMPs would reduce or limit the impact of a release to travel offsite. Therefore, offsite flooding impacts due to construction or operation of P3 are less than significant.

9. The overall consequences of flood damage are low, because P3 is not a critical facility and its location would not exacerbate offsite flood impacts. Therefore, the flood risk is low for scenarios where the probability of flooding is low (specifically riverine flooding, levee failure, dam failure, and sediment deficiency to beaches).

10. Based on preliminary results of coastal storm modeling that incorporates the effects of climate change on flood hazards, staff concludes that coastal flood risk would be low during the 30-year lifespan of the proposed project, even with uncertainties of hazard modeling and rate of future sea level rise. Pending additional information on long-term shoreline changes, staff will refine its assessment of this risk for the Final Staff Assessment.

11. P3 would not result in the indirect impact of inducing population growth in the vicinity. P3's incremental effects on regional water supply or the quality of surface water and ground water would not be cumulatively considerable.

12. Staff has not identified any soil or water resources environmental justice issues resulting from the proposed project. No environmental justice populations would be significantly, adversely, or disproportionately impacted.

13. P3 would comply with federal, state, and local LORS with implementation of conditions of certification recommended by staff.

PROPOSED CONDITIONS OF CERTIFICATION

CONSTRUCTION - NPDES GENERAL PERMIT

SOIL&WATER-1: The project owner shall fulfill the requirements contained in the 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-DWQ, 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 P3 project. The SWPPP shall also include demolition activities of MGS Units 1 and 2, unless documentation from the State Water Resources Control Board or the Regional Water Quality Control Board is provided that shows the NPDES Permit is not required for proposed demolition activities.

Verification: At least thirty (30) days prior to site mobilization, the project owner shall submit the construction SWPPP to the CBO and CPM and a copy of the approved SWPPP shall be kept accessible onsite at all times. Within ten (10) days of its mailing or receipt, the project owner shall submit to the CPM any correspondence between the project owner and the State Water Resources Control Board or the Regional Water Quality Control Board about the general NPDES permit for discharge of storm water associated with this activity. This information shall include the notice of intent, the notice of termination, and any updates to the construction SWPPP.

CONSTRUCTION - NPDES WASTEWATER DISCHARGES

SOIL&WATER-2: The project owner shall fulfill the requirements contained in the following NPDES permits adopted by Los Angeles Regional Water Quality Control Board (LARWQCB), and all subsequent revisions and amendments, which specifically regulate discharges of hydrostatic test waters and construction dewatering, as applicable: NPDES Permit No. CAG674001: *Discharges of Low Threat Hydrostatic Test Water to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties* and NPDES Permit No. CAG994004*: Discharges of Groundwater from Construction and Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties*.

Verification: The project owner shall submit to the CPM copies of all relevant correspondence between the project owner and the SWRCB or LARWQCB regarding the above NPDES permits within ten (10) days of its receipt or submittal. This information shall include copies of the Notice of Intent and Notice of Termination for the project. A letter from the SWRCB or LARWQCB indicating that there is no requirement for the wastewater discharge of hydrostatic testing or construction dewatering would satisfy the corresponding portion of this condition.

CONSTRUCTION – DEWATERING PLAN

SOIL&WATER-3: The project owner shall fulfill the requirements contained in the following Los Angeles Regional Water Quality Control Board (LARWQCB) Waste Discharge Requirements (WDRs) and all subsequent revisions and

amendments: *LARWQCB Order No. R4-2015-0201 (NPDES No. CA0001180)* for storm water and process wastewater discharge to the Pacific Ocean; and *LARWQCB Order No. R4-2008-0087 (File No. CI-8561)* for municipal domestic wastewater discharge through a subsurface septic system. The project owner shall notify the CPM of any violations of discharge limits or amounts. A monthly summary of industrial wastewater discharge shall be submitted to the CPM in the annual compliance report.

Verification: The P3 annual compliance report shall include a monthly summary of daily industrial wastewater discharge and an estimate of reclaimed storm water used to offset potable water use. The project owner shall submit to the CPM any updates or amendments of the above WDRs within ten (10) days of adoption by the LARWQCB. The project owner shall notify the CPM of any violations, exceedances, enforcement actions, or corrective actions within ten (10) days of receipt from the LARWQCB.

OPERATION – WASTE WATER DISPOSAL AND REPORTING

SOIL&WATER-4: The project owner shall fulfill the requirements contained in the following Los Angeles Regional Water Quality Control Board (LARWQCB) Waste Discharge Requirements (WDRs) and all subsequent revisions and amendments: *LARWQCB Order No. R4-2015-0201 (NPDES No. CA0001180)* for storm water and process wastewater discharge to the Pacific Ocean; and *LARWQCB Order No. R4-2008-0087 (File No. CI-8561)* for municipal domestic wastewater discharge through a subsurface septic system. The project owner shall notify the CPM of any violations of discharge limits or amounts. A monthly summary of industrial wastewater discharge shall be submitted to the CPM in the annual compliance report.

Verification: The P3 annual compliance report shall include a monthly summary of daily industrial wastewater discharge and an estimate of reclaimed storm water used to offset potable water use. The project owner shall submit to the CPM any updates or amendments of the above WDRs within ten (10) days of adoption by the LARWQCB. The project owner shall notify the CPM of any violations, exceedances, enforcement actions, or corrective actions within ten (10) days of receipt from the LARWQCB and fully explain the situation and corrective action taken in the annual compliance report.

WATER USE AND REPORTING

SOIL&WATER-5: The project owner shall record daily water use for the construction and operation of P3 and the decommissioning and demolition of MGS. The project owner shall comply with the water use limits and reporting requirements described below. If water use is forecasted to exceed the maximum annual use, the project owner shall notify the CPM and develop a plan to address exceedances.

Water supply for P3 construction needs shall be potable water supplied from the city of Oxnard. Potable water use for construction shall not exceed 2.3 acre-feet per year. A monthly summary of project construction daily water use shall be submitted to the CPM in the monthly compliance report.

Water supply for MGS decommissioning and demolition needs shall be potable water supplied from the city of Oxnard. Total potable water use for

these purposes shall not exceed 2.3 acre-feet per year. A monthly summary of MGS decommissioning and demolition daily water use shall be submitted to the CPM in the monthly compliance report.

Water supply for P3 operation and domestic needs shall be potable water supplied from the city of Oxnard. Total potable water use for these purposes shall not exceed 19 acre-feet per year. A monthly summary of daily water use, differentiating between operational and domestic use, shall be submitted to the CPM in the annual compliance report for the life of P3 operation.

Verification: The monthly compliance report shall include a monthly summary of daily water use for P3 construction, MGS decommissioning, and MGS demolition (as applicable). The P3 annual compliance report shall include a monthly summary of daily water use, differentiating between operational and domestic use.

The project owner shall notify the CPM within 14 days upon forecast to exceed the maximum annual water use as described above. Prior to exceeding the maximum use, the owner shall provide a plan to address exceedances.

ACRONYMS

ac-ft	acre-feet
AFC	application for certification
afy	acre-feet per year
AWPF	Advanced Water Purification Facility
bgs	below ground surface
BMPs	best management practices
CAISO	California Independent Systems Operator
CBO	Chief Building Official
CCC	California Coastal Commission
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CMWD	Calleguas Municipal Water District
CO-CAT	The Coastal and Ocean Resources Working Group for the Climate Action Team
CoSMoS	Coastal Storm Modeling System
CPM	Compliance Project Manager
CPUC	California Public Utilities Commission
cu-yd	cubic yards
cu-yd/yr	cubic yards per year
CWA	Clean Water Act
DTSC	California Department of Toxic Substances Control
EJ	environmental justice
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FIRM	Federal Insurance Rate Map
FSA	Final Staff Assessment
gpm	gallons per minute
GREAT	Groundwater Recovery Enhancement and Treatment
LARWQCB	Los Angeles Regional Water Quality Control Board
LOMR	Letter of Map Revision
LORS	laws, ordinances, regulations, standards
mgd	million gallons per day
MGS	Mandalay Generating Station
MHHW	Mean High Higher Water
MHW	Mean High Water
MLLW	Mean Lower Low Water
MLW	Mean Low Water
MTL	Mean Tide Level
MW	megawatt
NALs	numeric action levels
NAVD88	North American Vertical Datum of 1988
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Administration
NOx	nitrogen oxides
NPDES	National Pollutant Discharge Elimination Sytem
NRC	National Research Council

OC	organochlorine pesticides
OWS	oil-water separator
OWWTP	Oxnard Wastewater Treatment Plant
P3	Puente Power Project
PDO	Pacific Decadal Oscillation
PSA	Preliminary Staff Assessment
QFER	Quarterly Fuel and Energy Reports
RWQCB	Regional Water Quality Control Board
SCE	Southern California Edison
SCR-3	Santa Clara River Levee downstream of Highway 101
SLC	California State Lands Commission
SLR	sea level rise
SWPPP	Storm Watr Pollution Prevention Plan
SWRCB	California State Water Resources Control Board
TWL	total water level
UPRR	Union Pacific Rail Road
USC	United States Code
UWCD	United Water Conservation District
UWMP	Urban Water Management Plan
VCWPD	Ventura County Watershed Protection District
WDR	Waste Discharge Requirements
WMA	Watershed Management Area
WSA	water supply assessment

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APPENDIX SW-1
SOIL & WATER RESOURCES

Marylou Taylor

CLIMATE CHANGE AND P3 COASTAL FLOODING

Extensive documentation regarding the impacts of climate change on coastal flooding has been docketed by the applicant, intervenors, and the public. This appendix discusses the following issues of contention in detail and explains how staff determined whether information is relevant and appropriate:

- Sea Level Rise Guidance
- Critical Infrastructure
- Coastal Dependency
- Planning Horizon
- Hazard vs. Risk
- Flood Prediction Models
- Erosion Potential of Dunes
- Hazard Zone Mapping
- Federal Emergency Management Agency (FEMA) Hazard Map Update

SEA LEVEL RISE GUIDANCE

Coastal Commission vs. State Agency Working Group

The California Coastal Commission (CCC) and the Coastal and Ocean Working Group of the California Climate Action Team (CO-CAT) each published a sea level rise (SLR) guidance document in response to Governor Schwarzenegger‘s Executive Order S-13-08 issued in November 2008, which directed state agencies to plan for sea-level rise and coastal impacts. Although each guidance document was written for a different target audience, they are not in conflict with each other.

CO-CAT is a working group comprised of senior level staff from California state agencies responsible for ocean and coastal resource management that was formed to share information and coordinate actions for adapting to climate change impacts. CO-CAT developed the State of California Sea-Level Rise Guidance Document (COCAT 2013) to provide information and recommendations to enhance consistency across agencies in their development of approaches to sea-level rise. The CCC is one of the participating agencies of CO-CAT. CCC plans and regulates the use of land and water in the coastal zone, in partnership with coastal cities and counties. Development activities of land or public access to coastal waters generally require a coastal permit from either the CCC or an approved Local Coastal Program administered by the local government. In August 2015, the CCC adopted the Sea Level Rise Policy Guidance document (CCC 2015) as interpretive guidelines for Local Coastal Programs and Coastal Development Permit applicants. The Guidance is intended to assist in the preparation for sea level rise within the context of the California Coastal Act.

Appendix SW-1 Table 1 summarizes both SLR guidance documents. Both documents identify the 2012 National Research Council report as the "best available science" on the projected range of sea level rise by the years 2030, 2050, and 2100. Both documents also recommend similar important considerations when analyzing sea level

Appendix SW-1 Table 1
Summary of Sea Level Rise Guidance from CCC and CO-CAT

California Coastal Commission (CCC)	**Coastal and Ocean Working Group of the California Climate Action Team (CO-CAT)**
Process for addressing SLR in Coastal Development Permits	*Policy recommendations for incorporating SLR projections into planning and decision making for projects in California*
1. Establish the projected sea level range for the proposed project. • Determine time period of concern using expected project life. • Use range of SLR scenarios based on best available science (e.g. 2012 NRC report). • Modify projections to incorporate vertical land motion and planning horizon if needed. 2. Determine how sea level rise impacts may constrain the project site. • Consider current and future hazard impacts of: geologic stability and erosion, flooding and inundation, wave impacts, other impacts 3. Determine how the project may impact coastal resources over time, considering sea level rise. • Resources: Public access, coastal habitats, agriculture, water quality, scenic resources, archaeological and paleontological 4. Identify project alternatives to both avoid resource impacts and minimize risks to the project. 5. Finalize project design and submit permit application.	1. Use the ranges of SLR presented in the June 2012 National Research Council report as a starting place and select SLR values based on agency and context-specific considerations of risk tolerance and adaptive capacity. 2. Consider timeframes, adaptive capacity, and risk tolerance when selecting estimates of SLR. 3. Consider storms and other extreme events. 4. Coordinate with other state agencies when selecting values of SLR and, where appropriate and feasible, use the same projections of sea-level rise. 5. Future SLR projections should not be based on linear extrapolation of historic sea level observations. 6. Consider changing shorelines. 7. Consider predictions in tectonic activity. 8. Consider trends in relative local mean sea level.

rise such as timeframe, risk tolerance, changing shorelines, and extreme events.

The main differences between the two documents are functionality and target audience. The CCC document focuses on how to apply the Coastal Act to the challenges presented by sea level rise through Local Coastal Program certifications and updates and Coastal Development Permit decisions. A sizeable document almost 300 pages in length, the CCC guidance contains current science, technical, and other information and practices. It is intended to serve as a multi-purpose resource for a variety of audiences and includes a high level of detail on many subjects. In contrast, the CO-CAT guidance is a 13-page document developed specifically to assist state agencies with information and recommendations to enhance consistency across agencies. It recognizes that the document will be used in a flexible manner to fit the different mandates and decision-making processes of state agencies. It functions as a starting point for all state agencies to establish a general framework and approach.

Staff uses both documents for analysis of P3. Staff bases its sea level rise analysis on the CO-CAT guidance, as directed under Executive Orders S-13-08 and B-30-15. The CCC guidance is a valuable resource that staff uses to analyze impacts of SLR on the proposed project. Staff's analysis of climate change effects on coastal flooding roughly follows Appendix B of the CCC guidance, which provides information for determining local hazards.

Intervenors and members of the public insist that staff incorporate the CCC guidance into the analysis for P3, including sections on scenario-based analysis to approach sea level rise planning; storms, extreme events, and abrupt change; and sea level rise adaptation planning. Furthermore, they urge the Energy Commission to treat the project as critical infrastructure, and to apply the heightened considerations established by the CCC guidance (ECVC/SC/ED 2015b).

Conclusion:

Staff bases its sea level rise analysis on the CO-CAT guidance, and uses the CCC guidance as a resource to analyze impacts of SLR. "Critical Infrastructure" is a separate issue (discussed below). If staff considered a project to be a critical facility, additional considerations would be applied to the analysis as recommended by both CCC and CO-CAT guidance documents.

CRITICAL INFRASTRUCTURE

Federal Emergency Management Agency (FEMA) vs. California Independent System Operator (CAISO)

While it is important to reduce or eliminate risks from various hazards throughout a community, several types of structures and infrastructure are most important to protect. Damage to these critical facilities can impact the delivery of vital services, can cause greater damages to other sectors of the community, or can put special populations at

risk. FEMA recommends that critical infrastructure exceed the minimum NFIP standards for flood protection to ensure functional continuity of the critical services.[66]

Intervenors and members of the public have asserted that the project is critical infrastructure, and therefore a flood analysis must apply the heightened considerations that have been established by the CCC guidance. They cite the testimony presented at the CPUC proceedings where Southern California Edison and NRG used terms such as "critical contingency", "critical services", "critical generating location", and "essential electrical services" (COO 2015b1).

Staff does not agree. The testimony presented at the CPUC proceedings addressed the need for long-term procurement to meet local capacity requirements, and this does not directly translate to the need for heightened protection from flood damage. To understand staff's position on critical infrastructure, a clear distinction is needed between what FEMA and CAISO consider "critical". Staff's position is that using FEMA's determination of critical facility is appropriate for flood analysis of the proposed P3 site.

FEMA – CRS Program

FEMA does not require NFIP policyholders to exceed minimum standards to protect critical facilities. Instead, FEMA developed the Community Rating System (CRS), a voluntary incentive program that recognizes and encourages floodplain management activities that exceed the minimum NFIP requirements. Under CRS, flood insurance premium rates are discounted to reward community actions. The CRS has specific credited activities that are assigned credit points based on the extent of the activity. A community that engages in more mitigation activities becomes eligible for increasing NFIP policy premium discounts. One of the identified activities is "Protection of Critical Facilities (PCF)" from higher flood levels.

The CRS Coordinator's Manual (FEMA 2013) is the guidebook for the CRS and sets the criteria for CRS classification. It defines Critical Facility as:

> **A structure or other improvement that, because of its function, size, service area, or uniqueness, has the potential to cause serious bodily harm, extensive property damage, or disruption of vital socioeconomic activities if it is destroyed or damaged or if its functionality is impaired.** Critical facilities include health and safety facilities, utilities, government facilities, and hazardous materials facilities. For the purposes of a local regulation, a community may also use the International Codes' definition for Category III and IV buildings. (Emphasis added)

For further guidance on evaluating a PCF activity, the CRS Manual explains that there are usually two kinds of critical facilities that a community should address:

[66] Executive Order 11988 established a Federal Flood Risk Management Standard for construction or substantial improvement of federally funded buildings, roads and other infrastructure to better withstand the impacts of flooding. (The new standard does not affect the standards or rates of the National Flood Insurance Program.)

- **Facilities that are vital to flood response activities or critical to the health and safety of the public before, during, and after a flood**, such as a hospital, emergency operations center, electric substation, police station, fire station, nursing home, school, vehicle and equipment storage facility, or shelter. (emphasis added)
- **Facilities that, if flooded, would make the flood problem and its impacts much worse**, such as a hazardous materials facility, power generation facility, water utility, or wastewater treatment plant. (emphasis added)

Staff focuses on the intent (which staff has bolded in the text above). Although utilities and power generation facilities are mentioned as general examples of "critical" facilities, staff posits this emphasis stems from the fact that coal-fired power plants have historically produced the vast majority of the U.S. net electricity generation[67] as baseload generators.[68] It appears that these types of facilities, which contribute a large share of the electricity needed to meet the minimum continuous energy demand, would be considered a critical facility because an unexpected interruption in production could result in serious consequences. On the other hand, peaking power plants such as the proposed P3 project would run only occasionally, during periods of high energy demand. As a peaking facility, the proposed P3 does not fit the description of Critical Facility.

FEMA – HMA Programs

FEMA's Hazard Mitigation Assistance (HMA) programs reduce community vulnerability to disasters and their effects, promote individual and community safety and resilience, and promote community vitality after natural disaster. Critical facilities are defined[69] as:

> Structures and institutions necessary, in the community's opinion, for response to and recovery from emergencies. Critical facilities must continue to operate during and following a disaster to reduce the severity of impacts and accelerate recovery. These would include, but not be limited to:
>
> - Structures or facilities that produce, use, or store highly volatile, flammable, explosive, toxic, and/or chemically-reactive materials
> - Hospitals, nursing homes, and housing likely to have occupants who may not be sufficiently mobile to avoid injury or death during an emergency
> - Police stations, fire stations, vehicle and equipment storage facilities, and EOCs[70] that are needed for emergency response activities before, during, and after the event

[67] From 1949 to 2011, coal-fired plants production has ranged between 54 and 80 percent of total net kilowatt-hours generated from fossil fuels and between 43 to 57 percent generated from all sources including nuclear, and renewable (EIA 2012 Table 8.2b).

[68] The coal fleet maintained an average annual capacity factor above 70 percent from 2002 through 2008 (EIA 2013 p. 42).

[69] This definition is for HMA program use and clarification and is not meant to provide a definition for use under other programs or supersede any FEMA regulation (FEMA 2015a).

[70] Emergency Operation Centers

- Public and private utility facilities that are vital to maintaining or restoring normal services to affected areas before, during, and after the event
- Other structures or facilities the community identifies as meeting the general criteria above.

FEMA also utilizes the U.S. Water Resource Council Floodplain Management Guidelines for Implementing Executive Order 11988 and the following series of questions about the subject structure or facility to determine whether a proposed action is deemed a critical action. If any of the answers are "yes," then the proposed action is a critical action.

- If flooded, would the proposed action create an added dimension to the disaster, such as for liquefied natural gas terminals and facilities producing and storing highly volatile, toxic, or water-reactive materials?
- Given the flood warning lead-time available, would the occupants of buildings such as hospitals, schools, and nursing homes be insufficiently mobile to avoid loss of life and injury?
- Would essential and irreplaceable records, utilities, and/or emergency services be lost or become inoperative if flooded?

Although HMA and Executive Order 11988 are not applicable to P3, they provide insight into FEMA's considerations whether a facility should meet higher flood protection standards. Similar to the CRS Program, the focus is on the potential consequences to the community if the facility could not operate during or after a disaster. Peaking power plants such as the proposed P3 would run only occasionally during periods of high power demand. The proposed P3 does not fit the description of Critical Facility.

CAISO - LCR

The California Independent System Operator (CAISO) is responsible for ensuring grid reliability, both system reliability and local reliability, throughout its balancing authority area. Local reliability requires that a CAISO-designated local reliability area[71] have sufficient local power generation to meet long-term local capacity requirements (LCRs). In 2013, based on CAISO's study showing the need for in-area generation of the Moorpark sub-area of the Big Creek/Ventura local reliability area, the CPUC authorized Southern California Edison to procure a specific amount of additional electric capacity to meet long-term LCRs by 2021.[72]

CAISO's Local Capacity Technical Analysis uses power flow modeling to assess whether a local reliability area would meet established reliability criteria, such as the ability to supply a one-in-ten-year load forecast with two major contingency outages occurring almost simultaneously. The study determined that for the Moorpark sub-area, the most critical contingency is the loss of a transmission line followed by the loss of another pair of transmission lines. The proposed P3 would provide electric capacity to

[71] A *local reliability area* is a geographic area that is transmission-constrained, meaning it does not have sufficient transmission import capability to serve the local customer demand.

[72] Decision 13-02-015 of the California Public Utilities Commission. February 13, 2013.

help meet these local requirements, an outage of the 271-MW P3, whether for a short time or several months, would not threaten system reliability. For further discussion, see **APPENDIX SW-2** "The California ISO, the P3, and Grid Reliability".

Conclusion:

The proposed P3 is not a critical facility requiring additional flood protection because failure to operate during or after a major flood would not increase the severity of flood impacts nor impede the community's recovery. The potential failure of P3 would not threaten local reliability or system reliability.

COASTAL DEPENDENCY

Consistency with the California Coastal Act

The California Coastal Act (PRC §30101) defines "Coastal-dependent development or use" as "any development or use which requires a site on, or adjacent to, the sea to be able to function at all." Intervenors and members of the public assert that the P3 project is not coastal-dependent and therefore construction at the proposed site is not consistent with the California Coastal Act. A discussion of P3's consistency with land use LORS is contained in the **Land Use** section of this PSA. All applicable local and state land use LORS are analyzed, including the California Coastal Act, the Warren-Alquist Act, and the City of Oxnard Coastal Land Use Plan.

Conclusion:

Whether or not P3 is consistent with the Coastal Act is a **Land Use** issue and beyond the scope of the **Soil and Water Resources** technical section. (See the **Land Use** section of this PSA).

PLANNING HORIZON

Proposed P3 Lifespan vs. Expected MGS Lifespan

Sea level rise guidance (COCAT 2013) emphasizes the importance of the timeline identified for a project. For the near future (out to 2030), confidence in the global and regional projections is relatively high, but uncertainty grows larger as the time horizon of the projection is extended forward (see **Appendix SW-1 Table 2**). These uncertainties arise from an incomplete understanding of the global climate system, the inherent unpredictability of natural climate variation, the inability of global climate models to represent every important global and regional component accurately, and the need to make assumptions about important climate drivers over future decades (e.g., greenhouse gas emissions, aerosols, and land use). The actual sea-level rise value for 2100 is likely to fall within the wide uncertainty bounds provided in the 2012 NRC West Coast Sea Level Rise Report, but a precise value cannot be specified with any reasonable level of confidence.

Appendix SW-1 Table 2
California Sea Level Rise Projection using 2000 as the Baseline

Time Period	South of Cape Mendocino

2000 - 2030	0.13 to 0.98 ft
2000 - 2050	0.39 to 2.0 ft
2000 - 2100	1.38 to 5.48 ft

(Source: COCAT 2013 and CCC 2015)

If the proposed P3 project is approved, the facility is scheduled to begin commercial operation in 2020 and operate for 30 years to 2050. A few public comments have raised concern that, if approved, the facility could remain operational for much longer, similar to the 60-year operational life of MGS. These comments suggest that a longer period appropriate for industrial facilities should be applied. The CCC guidance (CCC 2015) advises, “A longer time frame of 100 years or more should be considered for critical infrastructure like bridges or industrial facilities.”

The AFC identifies the project’s design lifespan to be 30 years, but the AFC also mentions the possibility of operating for longer depending on economics and other factors. A 20-year contract for gas-fired generation purchase agreement between the applicant and SCE was approved by the CPUC in late May 2016, but the contract would not preclude P3 from operating for less than or beyond a 20-year agreement. Staff understands that a lifespan of 30 years for a “typical” natural gas power plant is generally accepted within the power industry, and that the actual useful life also depends on partial load cycling operation and frequency of starts and stops. For these reasons, the proposed 30 years of commercial operation is a reasonable timeframe, so staff’s primary focus is on the projected range of SLR by 2050 (between 0.39 foot and 2.0 feet).

Conclusion:

An assumed 100-year operational life is inappropriate mainly because P3 is not critical infrastructure (see “Critical Infrastructure” discussed above). The proposed 30 years of commercial operation is a reasonable timeframe, so staff’s primary focus is on projected sea level rise by 2050 shown in **Appendix SW-1 Table 2**.

HAZARD VS. RISK

The terms "hazard" and "risk" are often used interchangeably. However, in terms of risk assessment, these are two very distinct terms. A hazard is any biological, chemical, mechanical, or physical agent that is reasonably likely to cause harm or damage to humans or the environment with sufficient exposure. Risk is the probability that exposure to a hazard will lead to a negative consequence. With regard to flooding, an evaluation of flood risk provides information that is more useful for the Committee than only a discussion of flood hazard.

Flooding hazard is a measure of the potential for a flood to occur at a given site. It is also a measure of the potential magnitude of site-specific effects, including extent of inundation, height of runup, flow depth, and velocity of flow. Location of a project within a flood hazard zone indicates that flooding is reasonably likely to cause harm or damage to the project.

Flood risk is a measure of the consequences given the occurrence of a flood, which can be characterized in terms of damage, loss of function, injury and loss of life. Risk depends on many factors including exposure (magnitude of hazard), potential negative impacts (possible harm or damage), vulnerability (possible weaknesses in protection), adaptive capacity (ability to respond, moderate, or cope), and consequences (severity of impacts from exposure).

As stated in the **Soil and Water Resources** section (see "Flooding" in the "P3 Operation" subsection), staff determines the relative flood risk by estimating the likelihood of a flood impacting the proposed P3 and evaluating the consequences resulting from those flood impacts (shown in **Soil & Water Resources Table 3**). This approach of:

Risk = Likelihood x Consequence

was taken from the State of California Sea-Level Rise Guidance Document (see discussion above on Sea Level Rise Guidance), but staff also applied this evaluation to present-day flooding risk. The likelihood of impacts is mainly based on hazard maps, and the consequences are evaluated with respect to the severity of impacts on the following:

- Safety of people onsite and offsite
- Harm to biological resources from onsite toxins running offsite
- Effects of operational failure on electric grid reliability (local or system wide)

Conclusion:

An evaluation of flood risk is more useful information than a discussion of flood hazard alone, because the consequences of impacts are included in the evaluation.

FLOOD PREDICTION MODELS

Bathtub vs. Hydrodynamic Analysis

Maps and computer simulations that show the extent of potential sea-level rise are a common method of communicating the risk to coastal areas. These maps are included in assessment reports from various nongovernmental organizations, state and local agencies, and other private groups. In the last several years, vast amounts of high quality elevation data derived from light detection and ranging (LIDAR) have become available, and they are highly suitable for detailed study of physical responses related to sea-level rise. Although various mapping tools use the same LIDAR data, their flood maps may show different areas of inundation for the same sea level rise scenario. Very large discrepancies are usually due to the differences between the type of model used, a static ("bathtub") model or a hydrodynamic model.

A "bathtub" model simply compares the projected higher water level to the land elevation and assumes that land below the water level is flooded instantly. It does not take into consideration whether the new flood areas connect to the ocean, nor does it

consider how the changes to the water level will change wave propagation or overtopping of flood barriers. This model presents a significant oversimplification of the processes involved in flooding, but it provides value in allowing individuals to gain a broad view of the general areas that could experience “every day” impacts of sea level rise on the regular tide cycle. Conversely, hydrodynamic modeling takes into account the details of local development patterns and the characteristics of waves and storms, and can therefore provide a clearer understanding of local sea level rise impacts compared to static models. In particular, hydrodynamic models take into account factors that alter flooding and inundation patterns and impacts.

Hydrodynamic flood mapping is recommended over equilibrium (i.e. “bathtub”) mapping because the static model is strongly biased towards over-prediction (GALLIEN 2011). **Appendix SW-1 Figure 1** compares the modeling method of six different mapping tools available online. No individual tool is completely accurate, but each has strengths that make it unique from the others and different limitations that users should keep in mind. Staff reviewed three interactive web-based flood map tools that were developed using dynamic modeling: Coastal Resilience (by The Nature Conservancy), Federal Insurance Rate Maps (FIRM, by FEMA), and the Coastal Storm Modeling System (CoSMoS 3.0, by USGS). Staff chose to use CoSMoS information because it projects coastal flooding and erosion due to both sea level rise and storms driven by climate change (discussed further below).

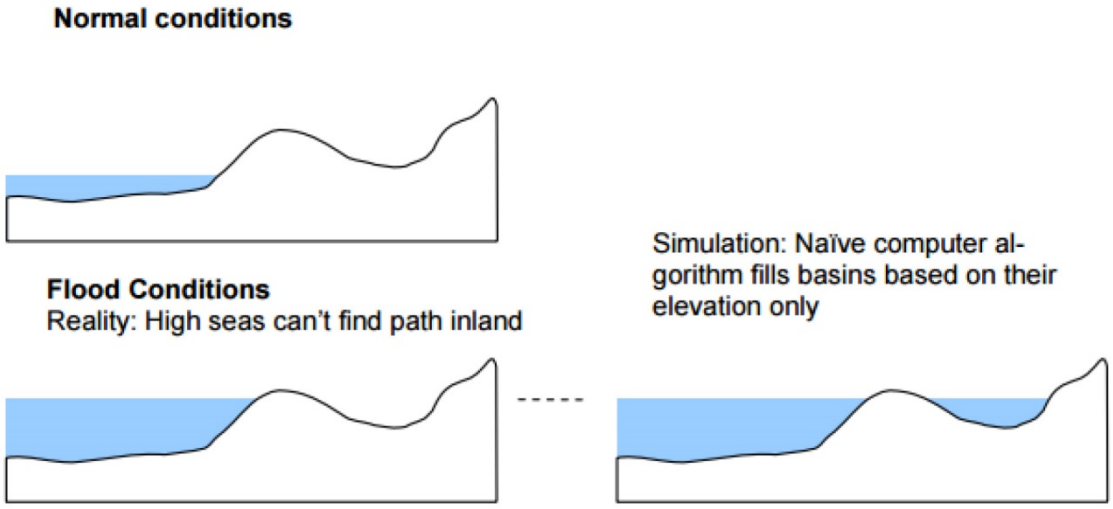
Conclusion:

Flood hazard information based on hydrodynamic analysis and site-specific data is required for siting purposes. Staff chose to use CoSMoS information because it projects coastal flooding and erosion due to both sea level rise and storms driven by climate change (discussed further below).

APPENDIX SW-1 - FIGURE 1

Puente Power Project – Comparison of SLR Flood Web Tools

Mapping Tool	Modeling Method	Organization/Sponsor
Surging Seas Risk Finder	Modified bathtub approach, modeling hydrologic connectivity and locally adjusted MHHW levels.	Climate Central
Sea Level Rise and Coastal Flooding Impacts Viewer	Modified bathtub approach, modeling hydrologic connectivity and locally adjusted MHHW levels.	NOAA Coastal Services Center
Coastal Resilience	HEC-GeoRAS tool in ArcGIS outputs for river flooding , FEMA overtopping model used results projected against topographic surface composite	The Nature Conservancy
Pacific Institute – The Impacts of Sea Level Rise on California's Coast	Bathtub approach	Ca Energy Comm, Ca EPA, Metropolitan Trans Comm, Caltrans, and the Ca Ocean Protection Council
Cal-Adapt - Exploring California's Climate	Bathtub approach and USGS Coastal Storm Modeling System (CoSMoS)	Ca Energy Comm; UC Berkeley Geospatial Innovation Facility
Our Coast, Our Future	USGS Coastal Storm Modeling System (CoSMoS)	Point Blue Conservation Science; USGS; Gulf of the Farallones National Marine Sanctuary; Coravai LCC



A static ("bathtub") model does not accurately map coastal flooding in areas protected by seawalls or levees or natural barriers.

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SOURCE: The Sea Level Rise and Coastal Flood Web Tools Comparison Matrix. The Nature Conservancy, NOAA's Office for Coastal Management, Climate Central. URL http://sealevel.climatecentral.org/matrix/, Date Access: March 7, 2016

EROSION POTENTIAL OF DUNES

Storm-Induced Erosion

Pacific Coast beaches experience typical seasonal changes in profile and location from summer to winter conditions (see **Appendix SW-1 Figure 2**). During winter months, increased total water levels along with high-energy, steep waves tend to move sand offshore. This increased wave energy changes the beach profile by pulling sand from the upper portions of the beach, typically resulting in a flatter beach. The sandbars that form just offshore help protect the beach by causing waves to break farther offshore and reduce the energy of the waves that come onshore. By the end of the summer or early fall after months of calm seas, the beach slowly recovers. The berms and back beach dunes typically recover, as long as sediment is supplied by the offshore bar or sediment sources upcoast (NHC 2005).

One large storm or a series of storms can cause significant beach and dune erosion. Storm erosion follows a similar but more rapid pattern than seasonal erosion. Damaging storms usually occur in the fall, winter, or early spring months when the “seasonal” winter beach profile is already relatively lean in shape. Storm damage can cause extensive dune erosion, scarping, or complete loss of the frontal dune. Recovery from a large storm follows a similar process of the seasonal beach, with offshore sandbars providing protection as smaller waves gradually buildup the beach. This can occur in the course of one season, but may take a year or more. Dune recovery is a much slower process that involves dune vegetation re-establishing, wind transport of sand, and other processes. It can take several seasons to several years or more for a dune to recover naturally from an extreme storm event.

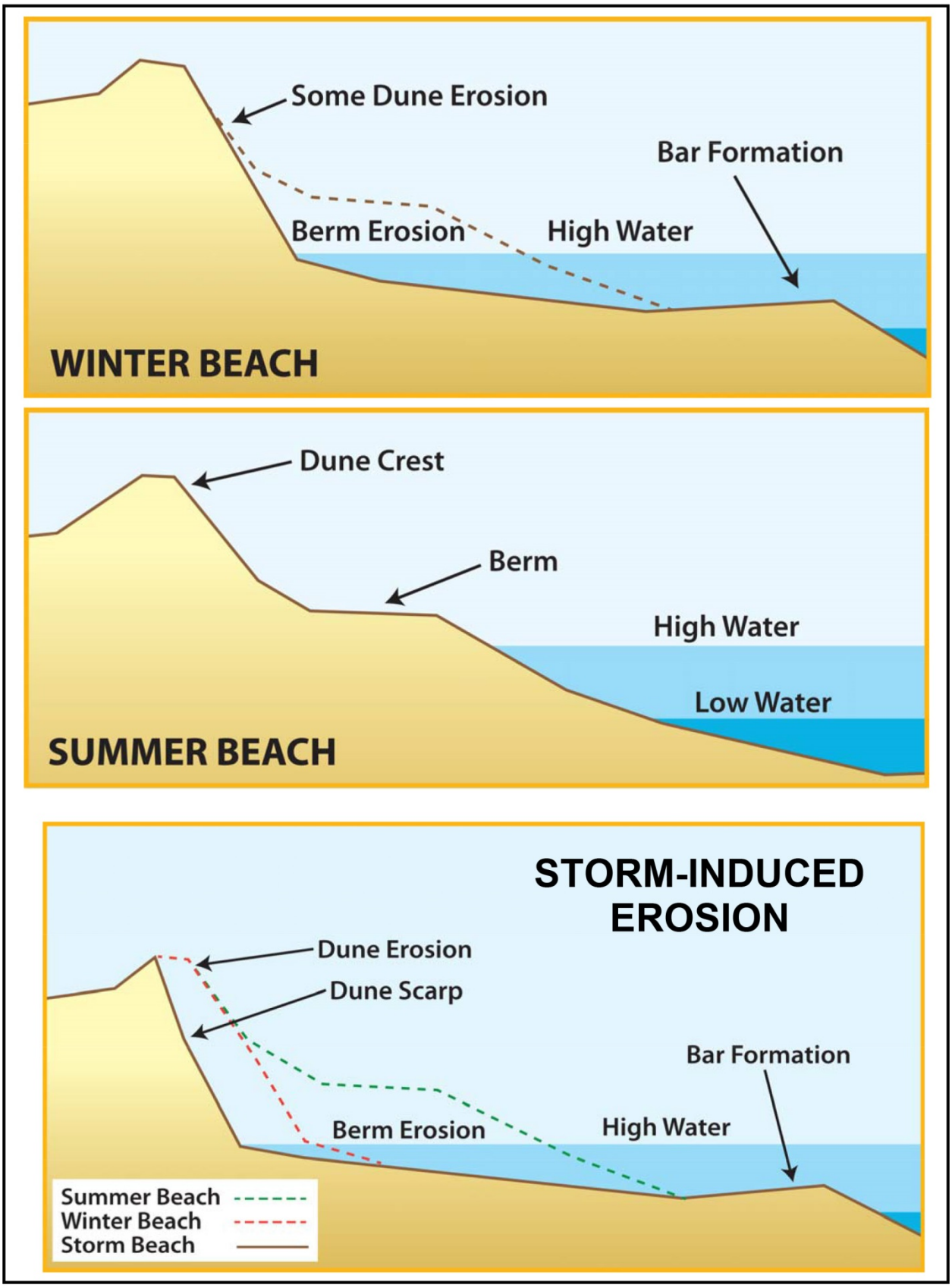
Conservative vs. Worst-Case

The complexity of coastal processes combined with the uncertainty of future waves, storms and sediment supply makes the task of predicting future beach and dune erosion difficult. While different methods have been developed to estimate and model coastal erosion, there is no single specific accepted method. When choosing between a conservative approach and a worst-case approach, staff considered the timeframe and risk tolerance of the proposed project.

Potential erosion at a particular location is influenced by site-specific factors including beach slope, width, orientation, sediment grain size, manmade structures, and human actions. The most dramatic changes in beach profile occur from episodic erosion. The amount of shoreline erosion during a storm depends primarily upon the magnitude of wave energy impacting the shore and the duration of the storm. The shoreline’s ability to recover from storm damage depends on the time between storms and the availability of sufficient sediment needed to rebuild. Chronic erosion, on the other hand, occurs from slow, long-term processes such as gradual shoreline adjustment associated with sea level rise, land subsidence, declining sediment supply, and possible long-term shifts in wave conditions, rainfall, and runoff due to climate change (NHC 2005).

APPENDIX SW-1 - FIGURE 2

Puente Power Project – Erosion of Beaches and Dunes



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Intervenors and members of the public have stated that present-day coastal hazards can flood the project site and directly affect safe operations of the proposed project. Several comments refer to hazard maps included in testimony submitted to the CPUC (COO 2015a) that show the area of potential coastal flooding reaches the proposed site's boundaries, almost completely surrounding the site. Staff learned that these maps were developed primarily for updating the City of Oxnard's Local Coastal Plan and therefore (understandably) uses very conservative assumptions and scenarios. However, applying these maps to analyze site-specific flood risks of the proposed project is overly conservative.

- *The representative wave conditions for the flood event is based on the highest observed water level at the Rincon Island tide gage on January 27, 1983* (ESA 2013, Table 14). Staff's position is the design event for the proposed project should be based on the one percent annual chance event consistent with engineering standards for flood design. The use of the highest observed water level is appropriate for purposes of a Local Coastal Plan, especially when historic records are limited. However, using this wave climate for purposes of analyzing P3 is too conservative, because assuming a worst-case scenario is unnecessarily extreme especially when combined with the other assumptions below.

- *Potential erosion projection assumes that the coast would erode or retreat to a maximum storm wave event with unlimited duration* (ESA 2013, page 20). Staff understands the uncertainty of the duration or clustering of future storms, but assuming a storm of unlimited duration is extremely conservative. This type of assumption represents a worst-case scenario that is not appropriate for the objective analysis of the proposed project.

- *Areas that are eroded are assumed to be flooded during a large storm* (ESA 2013, page 33). While this is a reasonable assumption in general, when combined with the assumption of a storm event with unlimited duration, it becomes unreasonably excessive. Overestimating the area of erosion would therefore result in overestimating the area of flooding.

- *Flooded areas with connectivity to the ocean were mapped. To conservatively account for seepage and potential errors in the digital elevation data, any pools (greater than 32 square feet) within ten feet of areas connected to the ocean were assumed flooded. Similarly, donut holes that are smaller than one acre were also assumed flooded* (ESA 2013, page 33). Including adjacent isolated pools and small donut holes to mapped flooded areas is reasonable, but it becomes overly conservative when combined with the other assumptions discussed above. If the mapped area of flooding is overestimated, then the addition of adjacent isolated pools and donut holes could represent a worst-case scenario that is not appropriate for the proposed project.

A conservative approach is appropriate for the proposed project rather than a worst-case approach. Episodic erosion will occur, but estimating coastal erosion based on the most damaging wave conditions on record for an unlimited amount of time essentially represents a series of multiple historic extreme storms occurring within the same

season. This scenario is possible, but very remote. Although the likelihood increases with climate change, the probability of this scenario occurring during the proposed project's lifetime is very uncertain. The use of a worst-case approach could be appropriate for a critical facility requiring heightened flood protection, however the proposed P3 is not considered a critical facility (see "Critical Infrastructure" discussion above). In addition, this section of the shoreline is not at high risk of erosion, as suggested by the site-specific characteristics of the beach (e.g. wide, dune backed, relatively low exposure to southern swells, and downcoast of a large sediment source, the Santa Clara River) and no recorded damage to the MGS facility during the two strongest El Niño cycles on record (occurring 1982/83 and 1997/98). Therefore, the assumptions discussed above are not warranted for estimating coastal erosion and resulting floods.

Conclusion:

The use of worst-case assumptions and scenarios are unwarranted for estimating coastal erosion and resulting floods at the P3 site. The proposed project is not considered a critical facility and this section of the shoreline is not at high risk of erosion. Analysis of site-specific flood risks should be based on the one percent annual chance event consistent with engineering standards for flood design, which is an appropriately conservative approach rather than a worst-case approach.

HAZARD ZONE MAPPING

Coastal Resilience vs. FEMA FIRM vs. CoSMoS 3.0

Due to increasing risk of flooding in coastal communities, several government agencies and environmental institutes have used mathematical modeling to develop interactive maps to visualize specific areas at risk to coastal hazards. Communities can use these maps to increase public education and awareness about coastal hazards, incorporate impacts of coastal hazards into planning and decision-making about coastal infrastructure, and improve emergency disaster management. Staff reviewed three interactive web-based flood map tools that were developed using dynamic modeling[73]: Coastal Resilience (by The Nature Conservancy (TNC)), Federal Insurance Rate Maps (FIRM, by FEMA), and the Coastal Storm Modeling System (CoSMoS 3.0, by USGS).

Each web-based tool was developed with its own modeling framework, but all three are conceptually similar. Each uses a combination of specialized computer models to transform offshore waves to nearshore coastal waters. The results from these modeling efforts provide boundary conditions for detailed onshore coastal flood hazard analyses that take into account key coastal processes, such as shoreline/dune erosion, wave setup, wave runup, and overland wave propagation. The most-recent LIDAR topography and digitial bathymetry (the underwater equivalent to topography) are integrated into the models for improved results of beach/dune response to wave conditions and flooding extent of areas hydraulically connected to the ocean.

[73] ESA 2013, COO 2015a, BAKER 2015, USGS 2009b, USGS 2014, USGS 2016

All three web-based tools were used to map projected flooding at the proposed P3 site. (It should be noted that at the time of this writing, all three tools are under development and have not yet been officially launched. Staff obtained preliminary information available online by the respective developers of each tool for analysis in this PSA. Any updates will be incorporated for the analysis in the Final Staff Assessment if available.) Staff attempted to compare the results of each tool for a same specific event: a 100-year coastal water level event assuming two feet of sea level rise. Because each tool has limited choices of mapping options, staff was not able to make a direct comparison. The maps from all three tools, showing projected flooding during an extreme event with different values of SLR (see **Appendix SW-1 Figure 3**), appears to present conflicting results. The FEMA map does not incorporate any amount of sea level rise, but the area of flooding is larger than USGS map that includes almost 40 inches of sea level rise. The map by TNC shows almost complete flooding of the MGS property with only slightly over two inches of sea level rise. These discrepancies stem from the differing characteristics of each tool, as described below.

Extreme Events

FEMA maps the one percent annual chance (100-year) flood event using a response-based approach. Based on water level and wave time series (1960 – 2009), a 50-year hourly time series of total water levels (TWL) was computed for each point of interest at the shoreline.[74] Using this TWL time series, statistical analysis was conducted to determine the one percent annual chance TWL and resulting one percent annual chance runup event for hazard area mapping. Because nearshore wave transformation was performed by a modeling system, there was no direct analysis of individual observed wave records to determine storm wave conditions (BAKER 2015). FEMA does not incorporate any amount of sea level rise when mapping hazard zones; therefore, maps represent present-day hazards only.

USGS projected future coastal hazards for the 100-year storm event in combination with sea-level rise. Storms are first identified from time-series of total water level proxies (TWLpx) developed from a simulated 30-year offshore wave time series (1980 – 2010) and a projected 90-year time series (2010 – 2100). TWLpx are computed for each point of interest at the shoreline based on the combination of storm surges, wave setup and runup, and sea level anomalies (seasonal tides and SLR). To account for future impacts of climate change, models are driven by output from the latest Global Climate Models and results include regional and local sea level rise factors. Then values of TWLpx are evaluated for extreme events. Several 100-year events are determined from varying combinations of wave-wind conditions and used for multiple model runs to better

[74] For more information on total water level (TWL), see “SLR – Consider Storms and Other Extreme Events” in the “Operation” subsection of the **Soil & Water Resources** section of this PSA and **Soil & Water Resources Figure 11**.

APPENDIX SW-1 - FIGURE 3

Puente Power Project – Comparison of Flood Web Tools at Proposed P3 Site



(A) Coastal Resilience Ventura
The Nature Conservancy

Combined Coastal Erosion, Flooding and Wave Impact Hazards in 2030

- with 2.3 inches of SLR
- with 5.2 inches of SLR
- with 8.0 inches of SLR

Source: COO 2015a, Figure 10

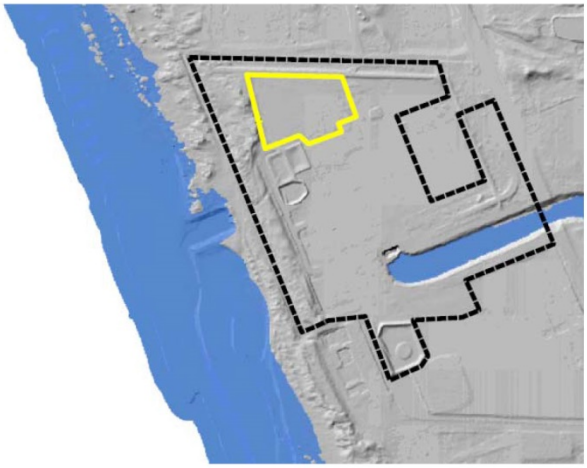


(B) Draft FIRM Work Map
FEMA (Open Pacific Coast Study)

Coastal High Hazard Area (VE Zone) during one percent annual chance flood

No sea level rise

Source: FEMA's Geoplatform (http://arcg.is/1OXJVRc) accessed March 12, 2016



(C) CoSMoS 3.0 – Initial Results
USGS

Inundation of 100-year Event with 39.4 inches of SLR

Source: USGS CoSMoS 3.0 (http://walrus.wr.usgs.gov/coastal_processes/cosmos/socal3.0/index.html) accessed March 21, 2016

account for regional and directional flooding affects. Model results are combined and compiled into scenario-specific composites of flood projection (e.g. 100-year storm with 3-feet of SLR).

TNC focuses on the evaluation of the extreme events during maximum storm-induced TWLs when hazards are most severe. A 20-year offshore wave time series (1992 – 2012) was used to develop nearshore wave height and period. These nearshore time series were then used to calculate a time series of TWLs for each point of interest at the shoreline. The high tide coastal storm flood modeling was integrated with the coastal erosion hazard zones (see “Shoreline Change” below). Future sea level rise was added to the total water level incrementally at each ten-year time step (ESA 2013). The largest storm on record was used for the coastal storm flooding, a storm event that occurred during the strong El Niño winter of 1982/1983 during which wave heights reached 25 feet at 22 seconds. Erosion projections were made every ten years and the coastal storm flood model considered these eroded areas susceptible to flooding during a large storm event (COO 2015).

Shoreline Change

FEMA does not directly incorporate the rates of shoreline change into the coastal flood analysis, because maps represent present-day hazards only. Instead, the erosion of shore and dune profiles are estimated during single large storm events. Because the potential flooding hazard event will likely occur during the winter, before determining beach profile changes for a particular storm event the initial beach profile conditions are first estimated. This initial beach profile represents the likely winter profile conditions for a particular coastal setting, defined as the Most Likely Winter Profile (MLWP). The storm-induced erosion alters the shoreline profile, which can affect the area and depth of resulting floods. Long-term littoral transport is not included in the analysis.

USGS determines storm-induced erosion based on the TWLpx of an extreme event (e.g. one percent annual chance) in addition to sea level rise and storms driven by climate change. A complementary module within CoSMoS is a numerical model that simulates long-term shoreline evolution due to sediment mobilized by waves and SLR. The modeled processes include longshore and cross-shore sediment transport, the effects of SLR, and sediment supply by natural sources and human activities. The result are integrated into flood mapping for more precise projections of future extents of flooding based on an evolving coastline.

TNC modeled coastal erosion by incorporating erosion due to SLR and erosion due to an extreme storm wave event. Because of wide uncertainties of future changes of sediment from the watersheds, sediment supplies are assumed to have no substantive changes. To account for SLR, erosion projections were made every ten years and the maximum possible erosion was estimated by assuming a maximum storm with “unlimited duration”. This conservative approach is intended to address the uncertainty of future storms. The potential erosion mapped during an extraordinarily long storm accounts for the possible occurrence of a cluster of large storms that does not allow time for full recovery. Because sea levels are expected to rise for centuries, this worst-case erosion could occur at some point in the future.

Hazard Zone

FEMA's Special Flood Hazard Area (SFHA) Mapping defines NFIP regulatory requirements concerning coastal construction. VE Zones are high hazard areas where wave action and/or high-velocity water can cause structural damage during the one percent annual chance flood and, therefore, construction requirements are more stringent compared to other zones. The actual VE Zone boundary shown on the Flood Insurance Rate Map (FIRM) is defined as the furthest inland extent of five criteria.[75] As shown in **Appendix SW-1 Figure 3(B)**, the project site is outside the VE Zone, which appears to extend to the dunes. The location of the boundary implies that waves do not overtop the dunes, flooding does not continue landward, and the dunes do not fit the criteria of a primary frontal dune zone. Therefore, the boundary represents the area where wave runup reaches three feet above the eroded ground. The project site is inside an X Zone, which is an area subject to flooding by floods more severe than the one percent annual chance flood.

USGS uses data that is based on maximum "sustained" inundation (rather than maximum wave runup height) to map the flood boundary location. The maximum water elevation attained at the MHHW gauge that is sustained a duration of at least two minutes is then extrapolated to intersect with the beach profile. This water elevation, which effectively represents standing water, is used to determine the eroded profile (at the time of "sustained" water level, not necessarily the final profile). The landward extent of flooding is the location of the water elevation at the eroded profile and the estimate of the wave setup is used as the ''flood elevation''. As shown in **Appendix SW-1 Figure 3(C)**, the project site is outside the projected flood area during a 100-year event with about 40 inches of SLR. The location of the boundary implies that inundation does not occur past the dunes. Because the map does not represent splashing, but it shows that water that may splash over the dunes is expected to drain quickly. USGS states that the wave setup approach for estimating coastal flooding is a better indicator of coastal regions that are subject to persistent, potentially damaging flooding during a given storm. In contrast, the more conservative wave runup approach represents less frequent, shallower flooding.

TNC's mapping uses a process called "spatial aggregation" to show the combined hazard zones of a given location. This type of exposure analysis determines the likelihood of damages based on the number of hazard zones that encroach on a particular asset. A user can indicate different planning horizons and different SLR scenarios when choosing hazard zones: erosion hazard zones (integrated with coastal flooding); coastal wave hazard zone (wave impacts); coastal flooding during extreme coastal events; coastal inundation during monthly extreme tides; and river flooding. **Appendix SW-1 Figure 3(C)** shows the combination of three separate hazards (erosion, coastal flooding, and wave impacts) under three different SLR scenarios (2.3 inches, 5.2 inches, and 8.0 inches). The location of the boundary shows that multiple hazards occur in all directions around the P3 site, implying that the entire dune system

[75] VE Zone must meet one of more of the following criteria: wave runup elevation is at least three feet above the eroded ground profile; wave overtopping splash exceeds the crest of a barrier by three feet or more; landward high-velocity flow (based on flood depth and velocity) is 200 ft^3/s^2 or more; breaking wave height is three feet more; and/or fits the criteria of a primary frontal dune zone (FEMA 2015c).

is eroded to expose most of the MGS property to wave impacts and flooding. It appears that the differences in SLR scenarios are relatively minor and that the elevation of the P3 site might save it from complete inundation.

Discussion

These three web-based tools use very different assumptions, which result in considerable differences between the mapped results.

TNC's mapping, by far the most conservative of the three tools, was developed as part of the Coastal Resiliency Study for long-term coastal planning. It assesses the vulnerabilities of human and natural resources through technical analysis of coastal hazards and climate change. Because sea levels are expected to rise for centuries, a conservative approach accounts for hazards that could occur at some point in the future. Although the combined hazard zones provide information on the possible hazards that could occur at a site, this type of analysis does not take into account the probability of simultaneously occurring events. This is useful for planning purposes, but not appropriate for a project-level analysis in a 30-year timeframe.

FEMA map's serves two purposes: rating structures for flood insurance policies and community floodplain management. The development of these maps is closely regulated by the National Flood Insurance Program and revisions occur roughly every five years, if needed. Future sea level rise is not analyzed. Although flood protection standards are nationwide, FEMA guidance for map development considers conditions applicable to specific regions. For the Pacific Coast, the somewhat conservative wave runup approach represents less frequent, shallower flooding.

USGS tool focuses on the assessment phase. These maps incorporate future sea level rise into the analysis, but acknowledge that storms may not persist long enough to cause maximum possible beach erosion. The less conservative wave setup approach represents more persistent flooding that could potentially cause more damage. Staff's position is the CoSMoS 3.0 tool is a reasonable method of analyzing future hazards that also includes potential effects of climate change.

Conclusion:

The CoSMoS 3.0 tool by USGS is a reasonable method of analyzing future hazards that also includes potential effects of climate change. Awareness of its assumptions helps understanding of its limitations and appropriate use. Staff will also consider the other two tools (by FEMA and TNC) in the context of their intended functions.

FEMA HAZARD MAP UPDATE

Effective Map vs. Preliminary Map

Floodplain maps show areas subject to inundation by the base flood (one percent annual chance flood). The main uses of floodplain maps are:

- Flood insurance – determining which buildings must have flood coverage and how much it costs
- Local building regulation – grading, building and remodeling in the mapped floodplain must comply with special rules and regulations.

The Federal Insurance Rate Map (FIRM) is the official map created and distributed by FEMA for the National Flood Insurance Program (NFIP). Each FIRM includes an "Effective Date" indicating the map is final and must be used for flood insurance purposes. Additionally, the City of Oxnard adopted a floodplain management ordinance based on the effective FIRM for the area. (Communities participating in NFIP are required to regulate new and existing development in mapped floodplains through ordinance that meets or exceeds the minimum NFIP criteria.)

Flood risks can change over time and water flow and drainage patterns can change dramatically because of surface erosion, land use, and natural forces. When updating a FIRM, FEMA requires the revision follows set standards and methods in the following sequence of steps: Planning, Development, Draft, Preliminary, and Effective. During the Draft stage, FEMA reviews and modifies, as appropriate, the draft information to ensure it complies with established NFIP criteria, then dates are set that the maps enter the Preliminary and Effective stages. The time between the Preliminary and Effective dates is typically 18 to 24 months.

The Preliminary FIRM is released to the public to give community officials, residents, and other stakeholders an early look at the projected risk identified by an in-progress flood hazard study. After a 90-day Appeal Period followed by a post-preliminary process, FEMA issues a notice of final flood elevation determination [Letter of Final Determination (LFD)]. The FIRM becomes effective starting six months after the LFD is issued, and the community must adopt a compliant floodplain management ordinance by the FIRM effective date to remain a participant in good standing in the NFIP.

Preliminary data are for review and guidance purposes. Although Preliminary FIRMs are not final, they are presented as the best information available at the time. Preliminary data cannot be used to rate flood insurance policies or enforce the federal mandatory purchase requirement, but a community can reasonably utilize the preliminary data for regulating floodplain development before the map becomes final and effective (FEMA 1998).

Ventura County's effective FIRM is dated 2010, but updates at the time were limited to inland hazards (e.g. riverine flooding). The boundaries shown of coastal hazards were developed in 1983, when the last comprehensive study of coastal flood risk was completed for California's Pacific coastline. FEMA is in the process of performing a detailed engineering study of the Pacific coast to reanalyze coastal flood hazards and update FIRMs. This Open Pacific Coast study uses new technologies and coastal data

to apply current FEMA standards of flood hazard analyses specific to the Pacific Coast of the United States (FEMA 2012). Revisions for Ventura County are in the Draft stage, and FEMA estimates that Preliminary FIRMs will be released approximately August 2016. Depending on the time needed to resolve any appeals and finalize maps during the post-preliminary process, the Preliminary FIRM is projected to become Effective in 2018.

Because the up-coming Preliminary maps incorporate recent coastal data and apply current FEMA standards for the Pacific Coast, flood hazard boundaries are expected to change from the boundaries currently delineated on the Effective maps (see **Soil & Water Resources Figure 5**). Although not yet "official", using Preliminary maps is appropriate for analysis of anticipated flood hazard areas. However, Preliminary maps are not expected to be available before August 2016, so for this PSA staff uses the current Effective maps and the Draft Work maps (the precursor to Preliminary maps). Staff will incorporate any relevant updates to the Draft Work maps if available for the analysis in the Final Staff Assessment.

Conclusion:

Using Preliminary maps, considered the best information available, is appropriate for analysis of flood hazard areas. Because Preliminary maps are not yet available, the current Effective maps and the Draft Work maps (the precursor to Preliminary maps) were used for this PSA. Staff will incorporate any relevant updates to the Draft Work maps if available for the analysis in the Final Staff Assessment.

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Appendix SW-2
Soil & Water Resources

David Vidaver

THE CAISO, P3, AND GRID RELIABILITY

SUMMARY

System and local reliability planning, which are probabilistic in nature, are conducted to ensure that electricity demand can be met except under very stressed conditions that are expected to occur one day or less every ten years. System reliability assessments assume that several thousand mega-watts (MW) of generation capacity will be unavailable to the California Independent System Operator (CAISO) due to maintenance needs at any and every moment in time; accordingly, an outage of the 271 MW Puente Power Project (P3), whether for a short time or several months, would not threaten system reliability. Local reliability requires that sufficient generation be located in transmission-constrained areas so as to withstand the sequential failure of two major system components under one-day-in-ten-year demand conditions. Thus the potential failure of a single component - P3 - does not threaten local reliability. The joint failure of three components (e.g. P3 and the McGrath and Mandalay 3 generation units due to a natural disaster) is sufficiently remote that the CAISO does not consider it a contingency for which it must plan as part of its responsibility for ensuring local reliability.

INTRODUCTION

The California Independent System Operator (CAISO) is responsible for ensuring grid reliability throughout its balancing authority area; it is required to meet reliability standards imposed by the North American Electric Reliability Corporation (NERC) and the regional Western Electricity Coordinating Council (WECC). These standards require that the CAISO portion of the transmission grid be expanded, maintained, and operated so as to ensure reliable electricity service even during periods of stress (i.e., under extreme electricity demand conditions and after the failure of major system components: large generators and transmission lines). It also requires that the CAISO procure control of sufficient generation capacity to ensure reliable service given the transmission system that is in place. In other words, reliable service requires joint consideration of the transmission system and the portfolio of power plants that generate electricity.

“Reliable service” is broadly defined as the ability to meet customer demand for electricity every day but one over a ten-year period. In California, the demand for electricity is most likely to be highest on the hottest weekday of the year, when air conditioning use is highest. The one-day-in-ten-year standard has historically required procurement of generation capacity equal to 115 percent - 117 percent of *forecasted* peak (maximum) electricity demand. The excess, (the “planning reserve margin”) allows for generators being out for maintenance, hotter than *expected* weather on the hottest

day of the year, and the need for at least a three percent "operating reserve margin" under all operating conditions.[76]

SYSTEM RELIABILITY AND LOCAL RELIABILITY

Electric reliability has two spatial dimensions: system reliability and local reliability. System reliability requires that the CAISO procure control over sufficient generation capacity – both internal to the CAISO area and imported from elsewhere – to meet customer demand in the CAISO area in aggregate: the above-mentioned 115 percent - 117 percent of forecasted peak load. If constructed, P3 would contribute up 271 MW to system capacity requirements.

Local reliability requires that sufficient capacity be available under stressed conditions within any CAISO-designated area that is "transmission constrained." Such areas, designated load reliability areas (LRA)[77], are characterized by a need for "local" generation capacity within the area, as there is insufficient transmission capacity to import all the electricity that may be needed under stressed conditions. The amount of capacity needed in an area or sub-area is designated the "local capacity requirement" (LCR). An area's LCR is the amount of capacity that must be dispatchable in order to ensure that the area can be reliably served under 1-day-in-10 -year demand conditions even if two major system components fail within 90 minutes of each other[78]. LCRs are determined annually (one year ahead) by the CAISO in a series of studies collectively referred to as the Local Capacity Technical Analysis.

The availability of a sufficient amount of capacity in an LRA and its sub-areas is ensured by imposing "local resource adequacy requirements" on load-serving entities (utilities, energy service providers and community choice aggregators) who, in turn, and when and where necessary, enter into "resource adequacy contracts" with merchant generators. This contract requires the generator to make itself available to the CAISO for dispatch upon request.

MOORPARK SUB-AREA

There are ten LRAs in the CAISO balancing authority area; some of these have sub-areas in which threshold amounts of local capacity must be available to the CAISO. The area with the largest LCR is the Los Angeles Basin LRA: 8,900 MW of the area's 11,000 MW were needed for local reliability in 2015. If constructed, P3 would reside in the Moorpark sub-area of the Big Creek – Ventura LRA and contribute up to 271 MW

[76] *Operating reserve margin* is the amount of capacity available in real time over and above that which is generating electricity. At operating reserve margins of less than three percent, the system is at risk of uncontrolled, cascading outages given sudden component failure; as, a result, service is curtailed when the operating reserve margin falls to less than three percent.

[77] They are also referred to as "local capacity areas" (LCA).

[78] Those generation resources in an LRA that are owned by municipal utilities are assumed to be operated at full output; those with must-take contracts with investor-owned utilities are assumed to be operated at their historical average output levels for summer afternoons. Load-serving entities (utilities, energy service providers and community choice aggregators) must demonstrate control of sufficient remaining capacity through ownership or contract to meet their (peak load-proportionate) share of the LCR.

towards the area and sub-area LCRs. In 2017, the LCR for the LRA is 2,398 MW, for the Moorpark subarea it is 462 MW.[79] The projected LCRs for 2020 are 2,598 MW and 547 MW, respectively.[80] Changes in the LCR over time are largely a function of demand growth and upgrades to the transmission system. These raise and lower the LCR, respectively.

In its 2012 Long-term Procurement Planning (LTPP) proceeding (R.12-03-014), the California Public Utilities Commission (CPUC) authorized Southern California Edison to procure at least 215 MW and up to 290 MW of conventional natural gas-fired generation capacity in the Moorpark sub-area in order to meet anticipated long-run LCRs in the Moorpark sub-area.[81] This authorization considered two significant future developments. One was the deployment of "preferred resources" in the Moorpark LCR: energy efficiency, demand response, and renewable generation capacity. These reduce the LCR requirement or contribute toward meeting it using resources that are preferred to the development of natural gas-fired generation. The second was the expected retirement of Units 1 and 2 at the Ormond Beach Generating Station and Units 1 and 2 at the Mandalay Generating Station no later than December 2020, pursuant to the State Water Resource Control Board's policy on the use of once-through cooling technologies in power plants. These local resources contribute more than 1,940 MW to meeting the Moorpark and Big Creek – Ventura LCRs; it is their retirement that effectively creates the need for the development of new capacity.

GRID RELIABILITY AND P3 OUTAGES

In assessing the potential impact of an outage of P3 on system and local reliability, it is important to remember that reliability planning is probabilistic in nature. The electricity system is planned (and operating standards are imposed) so as to reduce the likelihood of involuntary load shedding[82] to acceptable levels, but very-low probability events can still result in curtailed service. For example, extremely high temperatures across the CAISO area (say, observed only once every 25 years), combined with a higher-than-average level of power plant outages, will almost certainly result in load shedding, as it should.[83]

[79] 2016 Local Capacity Technical Analysis: Final Report and Study Results, California ISO, April 15, 2015. The 2017 version of this analysis, published on April 29, 2016, found a LCR for the Moorpark sub-area of 511 MW, an increase of 49 MW over the 2016 value.

[80] 2020 Local Capacity Technical Analysis: Final Report and Study Results, California ISO, April 30, 2015, p. 88.

[81] Decision Authorizing Long-term Procurement for Local Capacity Requirements (D.13-02-015), California Public Utilities Commission, February 13, 2013.

[82] *Involuntary load shedding* is an industry term for a controlled "turning off of the lights" in order to prevent a potentially uncontrolled collapse of the system.

[83] "Acceptable" levels of reliability are determined, in part, by the cost of providing higher levels of reliability. Building a large (500-MW) power plant for $700 million dollars might reduce the probability of an involuntary curtailment of service during a summer from, for example, 3 percent to 1 percent and be deemed a good investment. Building a second plant (for the same $700 million cost) reduces the probability by less (say from 1 percent to 0.6 percent), a third by even less (from 0.6 percent to 0.4 percent) and so on. At some point the "reliability bang for the buck" is not sufficient to justify the additional investment/cost.

System reliability planning assumes that a share of generation capacity will be out for maintenance at any point in time, including during periods of peak demand. P3 being unavailable, whether for a few days or a few months, is all but a non-event from a system reliability standpoint; P3's 271 MW of capacity is a small share of the several thousand MWs of capacity that are assumed to be unavailable on a given day. Recall that California's electricity system survived the shutdown of the San Onofre Nuclear Generating Station (2,240 MW) from January 13, 2012 to June 7, 2013 without experiencing load curtailments.

The impact of a P3 outage on *local* reliability is of greater significance, but does not raise the probability of load shedding to an unacceptable level. The CAISO's 2020 Local Capacity Technical Analysis (LCTA)[84] allows one to reasonably assume the following for 2021, the year immediately following the retirement of Units 1 and 2 at Ormond Beach an Units 1 and 2 at Mandalay:

- A 2021 LCR requirement of 547 MW, unchanged from 2020, due to the need to maintain local service with the sequential outage of the three Moorpark – Pardee 230kV transmission lines *when electricity demand in the Moorpark sub-area is at 1-in-10-year peak levels.*

- Total generation capacity in the Moorpark sub-area of 695 MW, including the generation assumed to be in operation in 2020, plus P3 (not assumed to be operating in 2020 in the CAISO study), less the Ormond Beach facility (1,516 MW) and Units 1 and 2 at Mandalay (430 MW), both assumed to be retired at the end of 2020 pursuant to the SWRCB's once-through-cooling policy.

The 2020 LCTA determined that the event which has the greatest impact on LCR needs is the sequential loss of a transmission line and another pair of transmission lines, not the loss of two power plants, even the 1,516 MW of units at Ormond Beach. It follows that the sequential loss of P3 and another major component does not create reliability issues: reliable service can be maintained in the Moorpark sub-area at the decadal peak even if P3 (and another component of the system) is not available. While the loss of P3 reduces sub-area capacity to 424 MW (less than the 547 MW LCR), this presents reliability concerns *only when the Moorpark - Pardee 230kV transmission lines are unavailable*. This "N-3 contingency," (one transmission line going down, the remaining lines going down, *and* P3 being unavailable) is not one that the CAISO is required to plan for; it is considered too improbable. It is all the more improbable when one considers that this series of events must occur on the hottest day of the decade.[85]

[84] 2020 Local Capacity Technical Analysis: Final Report and Study Results, California ISO, April 30, 2015.

[85] It should be noted that electricity demand in the Moorpark sub-area on the "typical hottest day of the year" is roughly 300 MW less than the demand on the "typical hottest day of the decade," or roughly the amount of energy that would be provided by the P3. While it would be necessary to perform a power flow study to verify that such is the case, it would appear that the sequential loss of the Moorpark – Pardee 230kV transmission lines and the simultaneous outage of the P3 would not result in curtailments on the typical hottest day of the year.

The simultaneous output of P3, Mandalay 3 and McGrath, a total of 448 MW (leaving 247 MW of generation available in the Moorpark sub-area), due, for example to severe flooding, has the potential to create reliability concerns. The remaining generation is 300 MW less than the estimated 2021 LCR. But here again, even if the simultaneous outage of P3, Mandalay, and McGrath is considered a single contingency (it is not), this would be an N-3 contingency that the CAISO is not required to plan for. And, again, this would have to happen on the hottest day of the decade.[86] The chances of the failure of the Moorpark – Pardee 230kV transmission lines on the hottest day of the decade, after a 500-year flood has disabled the coastal peakers in the Moorpark sub-area are remote enough that the CAISO and the state energy agencies are not required to build or operate the electricity system to guard against the event.

[86] Again, this 300 MW shortage would be offset by 300 MW of lower sub-area demand if it merely happened on the typical hottest day of the year.

APPENDIX SW-3
Soil & Water Resources

Marylou Taylor

ESTIMATING FLUSH TIMES

INTRODUCTION

When once-through cooling of MGS Units 1 and 2 cease, reduced flows could potentially degrade water quality of the Edison Canal and Channel Islands Harbor by reducing flushing and water circulation. To determine whether MGS decommissioning would significantly impact water quality, staff compared marine harbor flush rates with and without flows induced by once-through cooling of MGS Units 1 and 2.[87]

The flush time of a harbor is basically the time needed to remove or reduce (to a permissible concentration) a dissolved or suspended contaminant. Long flush times indicate sluggish circulation, and short flush times usually indicate a rapid exchange of water between the harbor and the open ocean. Short flush times are often associated with better water quality. The water exchange rate is affected by many factors such as harbor geometry, local tidal range, wave climate[88], and weather conditions. Depending on the geographical location, one or more of these variables can dominate the water exchange properties of a harbor at any given time.

For simplicity, staff assumed that the ebb and flood flows of the tidal cycle to be the dominant factor, with other factors (wind effects, stratification, turbulent mixing, etc.) assumed negligible. This appeared a reasonable assumption considering the absence of a year-round freshwater source, such as a river that contributes to flushing of an estuary. Channel Islands Harbor does not have the benefit of turbulent mixing and dilution from an additional source. Wave activity within the harbor is relatively quiet due to the entrance channel jetties, detached breakwater, and two small wave-absorbing beaches inside the harbor immediately opposite the entrance (USACE 1967). Furthermore, a harbor circulation study in 2003 found tidal currents to be the dominant environmental forcing factor (EIC 2003).

APPROACH

Staff used a simple model to estimate tidal flushing that was used by the Unified Port of San Diego in consultation with the San Diego Regional Water Quality Control Board (RWQCB) when developing total maximum daily load of dissolved copper for a harbor

[87] The Edison Canal also services MGS Unit 3, a 130 MW simple-cycle combustion turbine unit. Because Unit 3 does not create steam, it does not utilize once-through cooling water. However, whenever Unit 3 is in operation, a single 3,200 gallon per minute low capacity saltwater pump provides bearing cooling water from the Edison Canal to the combustion turbine cooling water heat exchanger (LARWQCB 2015). Unit 3 is seldom in operation, having a capacity factor of less than one percent.

[88] *Wave climate* is the long-term statistical characterization of the behavior of ocean waves at a particular location.

located in San Diego Bay (MOORE 2000). This simple model (box model) assumes a one-dimensional volume exchange between the harbor and the ocean: a volume of seawater enters the harbor with the rising tide, mixes with harbor water, and then a volume of the mixed water leaves the harbor during the falling tide. This volume of water is known as the tidal prism (see **Appendix SW-3 Figure 1**).

The box model divides the total amount of water in the harbor into two separate volumes. The volume of water when the tide is at mean lower low water represents the minimum amount that is present in the harbor (the bottom portion of the box figure). The volume of ocean water that enters the harbor (the top portion of the box figure) fluctuates throughout the year, so this simple box model estimates the long-term average volume to represent the tidal prism. If the tidal prism comprises a large proportion of water in the harbor, then the rising and falling tides would remove this volume of water out of the harbor along with pollutants or suspended sediments. Conversely, a small tide prism relative to total harbor volume implies a slower exchange of harbor water and incoming ocean water.

The number of tidal cycles required to achieve a specified dilution is calculated using the following equation:

$$N = \frac{\ln (C_o/C_n)}{\ln (1+ ((V_P/V_L) \times \alpha))} \qquad \text{Equation 1}$$

where N = number of tidal cycles
C_o = initial concentration (dimensionless)
C_n = final concentration (dimensionless)
V_P = volume (ft^3) of the tidal prism
V_L = volume (ft^3) of the harbor at Mean Lower Low Water (MLLW)
α = fractional rate of exchange

The equation can also be used to estimate the exchange of a relative amount of water (for instance, replace 50 percent of harbor water with ocean water). The fractional rate of exchange in the equation accounts for partial mixing of incoming water and water in the harbor, otherwise the equation would assume that the two volumes of water completely mix with every tide cycle.

ASSUMPTIONS AND DATA SOURCES

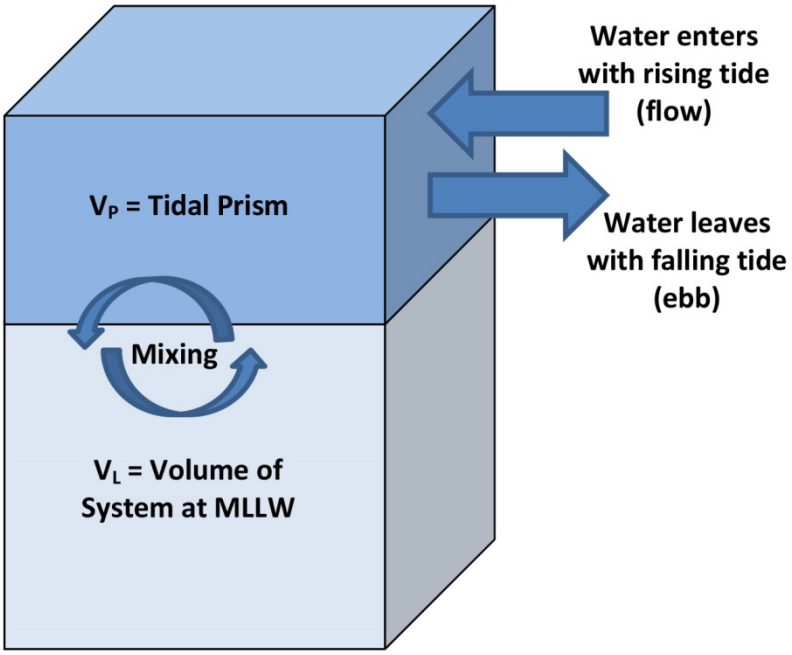
Volume of Tidal Prism (V_P)

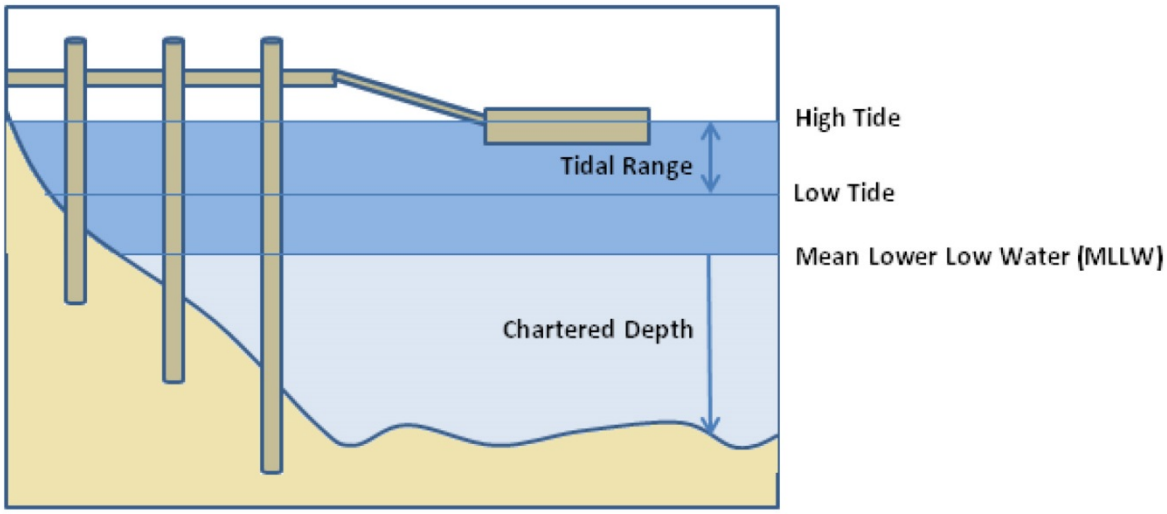
California has a mixed semidiurnal tide cycle, meaning two high and two low tides every lunar day.[89] These high and low water levels are also affected by the moon's rotation around the earth and the earth's rotation around the sun, all resulting in daily, monthly, and annual variations of tide elevations. For most NOAA tide stations, tidal datums are computed using 19 years of tide data, the definition of a tidal epoch. The Mean Higher

[89] Unlike a 24-hour solar day, a lunar day lasts 24 hours and 50 minutes.

APPENDIX SW-3 - FIGURE 1

Puente Power Project – Tidal Prism Simple Model





Chartered depth information from nautical charts used for marine navigation.

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High Water (MHHW) and Mean Lower Low Water (MLLW) levels represent the mean of the daily highest and lowest water levels. The difference in height between the two is the Great Diurnal Range (GT). The Mean High Water (MHW) and Mean Low Water (MLW) levels represent the mean of all the high and low tides of an epoch, respectively. The difference in height between these two is the Mean Range of Tide (MN). Datum elevations of the tidal station at Rincon Island are shown in **Appendix SW-3 Figure 2** (the nearest station located roughly 15 miles up coast of P3).

Staff estimated V_P by multiplying the tidal range (see **Appendix SW-3 Figure 1**) by the area of open water. Due to the mixed semidiurnal tide cycle, staff averaged the Great Diurnal Range (5.46 feet) and the Mean Range of Tide (3.72 feet) resulting in a tidal range value of 4.6 feet. The area of open water (see **Appendix SW-3 Figure 3**) was estimated from several sources, as listed in **Appendix SW-3 Table 1**. Assuming that the area of open water did not change over the tidal ranges, estimated volume V_P is 78,948,144 cubic feet (or 1812 acre-feet).

Appendix SW-3 Table 1
Estimated Area of Open Water

Sub-Area	Acres	Estimated from	Source
Channel Islands Harbor	200	Ventura County Harbor Department	VEN 2014
Mandalay Bay	124	Main Channel: 1.4 miles long 300 feet wide Other channels: 2 miles long 100 feet wide	City of Oxnard Zone Map Book Map ID 15
Mandalay Bay Phase IV	55	Specific Plan	City of Oxnard Development Services
Edison Canal	15	2.5 miles ~ 50 feet wide	PPP 2015c
TOTAL	394 acres		

Note: Sub-areas are shown in **Appendix SW-3 Figure 3**.

Volume at MLLW (V_L)

V_L can be estimated by multiplying the area of open water by the depth at MLLW (see **Appendix SW-3 Figure 1**). Nautical charts show that Channel Islands Harbor depths at MLLW vary from 18 feet at the entrance, ten feet in the main channels, and about nine feet at the end that is adjacent to the Mandalay Bay marina (NOAA 2015). Staff assumed that a depth of nine feet continues into the waterways within the entire Mandalay Bay and the Edison Canal (see **Appendix SW-3 Table 2**). Using these assumptions, the estimated volume V_L is 164,264,760 cubic feet (or 3,771 acre-feet).

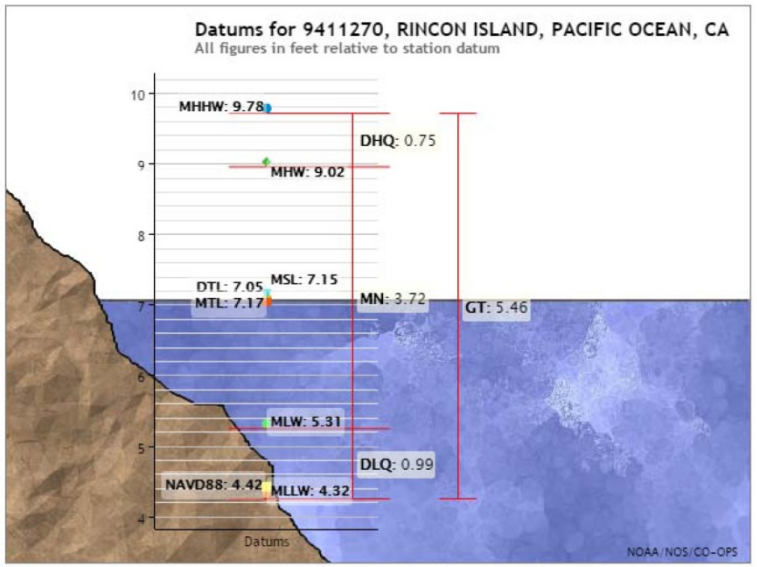
APPENDIX SW-3 - FIGURE 2

Puente Power Project - Datum Elevations of Rincon Island

Elevations on Station Datum

Station: 9411270, RINCON ISLAND, PACIFIC OCEAN, CA
T.M.: 120
Epoch: 1983-2001
Status: Accepted (Apr 17 2003)
Datum: STND
Units: Feet

Datum	Value	Description
MHHW	9.78	Mean Higher-High Water
MHW	9.02	Mean High Water
MTL	7.17	Mean Tide Level
MSL	7.15	Mean Sea Level
DTL	7.05	Mean Diurnal Tide Level
MLW	5.31	Mean Low Water
MLLW	4.32	Mean Lower-Low Water
NAVD88	4.42	North American Vertical Datum of 1988
STND	0.00	Station Datum
GT	5.46	Great Diurnal Range
MN	3.72	Mean Range of Tide
DHQ	0.75	Mean Diurnal High Water Inequality
DLQ	0.99	Mean Diurnal Low Water Inequality
HWI	5.47	Greenwich High Water Interval (in hours)
LWI	11.52	Greenwich Low Water Interval (in hours)
Maximum	12.13	Highest Observed Water Level
Max Date & Time	01/27/1983 07:30	Highest Observed Water Level Date and Time
Minimum	2.00	Lowest Observed Water Level
Min Date & Time	01/16/1965 00:00	Lowest Observed Water Level Date and Time
HAT		Highest Astronomical Tide
HAT Date & Time		HAT Date and Time
LAT		Lowest Astronomical Tide
LAT Date &		LAT Date and Time



Showing datums for
9411270 RINCON ISLAND, ...

Data Units ◉ Feet ○ Meters

Epoch ◉ Present (1983-2001) ○ Superseded (1960-1978)

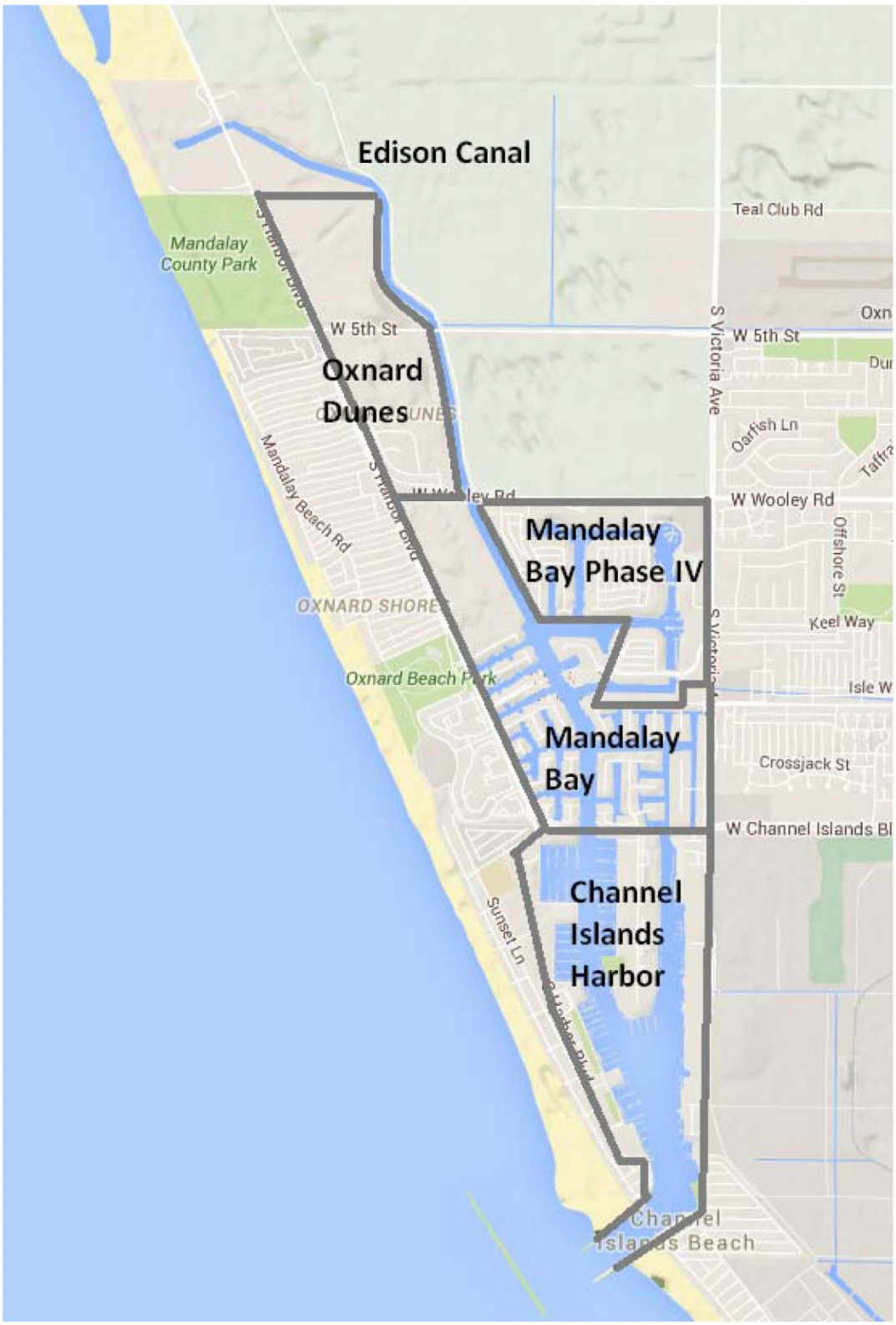
Submit

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SOURCE: NOAA 2003

APPENDIX SW-3 - FIGURE 3

Puente Power Project – Sub-Areas to Calculate Area of Open Water



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Appendix SW-3 Table 2
Estimated Depth of Open Water

Sub-Area[1]	Area (acres)	Estimated Depth at MLLW	Volume (cubic feet)	Source
Channel Islands Harbor	200 (13%) (36%) (51%)	18 feet 10 feet 9 feet	20,386,080 31,363,200 39,988,080	NOAA 2015
Mandalay Bay	124	9 feet	48,612,960	Note 2
Mandalay Bay Phase IV	55	9 feet	21,562,200	Note 2
Edison Canal[3]	6	9 feet	2,352,240	LARWQCB 2004
TOTAL	385		164,264,760	

Notes:
1. Sub-areas are shown in **Appendix SW-3 Figure 3**.
2. Staff assumed 9 feet depth continues into the waterways within the entire Mandalay Bay.
3. The Edison Canal was last dredged to a depth of ten feet below MLLW, and limited to a width of 20 feet in the central channel of the canal (rather than the entire width of the canal bottom). Staff assumed subsequent sedimentation reduced present day depth to nine feet.

Mixing (α)

The tidal prism method is a classical approach to estimating flushing time in tidal systems when only basin geometry (mean volume, surface area) and tidal range information are available. Two important assumptions with the basic tidal prism method are that the system is well mixed between incoming and outgoing tides, and that the source of new seawater does not contain return flow from the previous ebb tide. Because neither unmixed seawater nor returning harbor water contribute to flushing, deviations between an ideal system and reality can result in an underestimate of the flushing time, perhaps severely (UOG 2006). To account for partial mixing in the system, Equation 1 includes the fractional rate of exchange (α) to better estimate turnover time of the system (MOORE 2000).

This fractional rate of exchange, however, is very difficult to estimate especially for complex systems that contain areas of inefficient mixing. To further complicate estimates, the variable α is a significant factor in the equation where a small variance in its value can result in large change in the value of N. Because staff has no basis to develop an estimate for α of the Channel Islands Harbor system, staff assumed an exchange rate of 0.33 which is equivalent to South Beach Marina in Oregon, a simple marina with good hydraulic characteristics and good exchange due to strong currents (USEPA 1981). Since small, simple water bodies flush quickly and complex water bodies flush slowly (VIMS 2007), using the known exchange rate of a well flushed marina produces the absolute lower limit (least number of days) when estimating the flush time for the Channel Islands Harbor system.

Initial Concentration (C_o) and Final Concentration (C_n)

Recognizing the importance of marina flushing in efforts to minimize nonpoint source pollution in coastal waters, the U.S. Environmental Protection Agency (EPA) provides guidelines for marina flushing management measures. It identified BMPs as illustrative examples of flushing guidelines in different coastal regions and primarily applies to new or expanding marinas. Although there is no specific guideline for marina basins in Southern California, EPA guidelines for southeastern and northwestern United states suggests adequate tidal flushing to maintain water quality flushing reductions (the amount of conservative substance that is flushed for the basin) ranging from 70 percent to 90 percent over a 24-hour period (USEPA 1993).

To estimate the number of tidal cycles required to flush 70 percent of the harbor system using Equation 1, staff set C_o to 100 and C_n to 30. Similarly, C_n was set to ten for estimating the 90 percent flush time. These two scenarios mark the range of adequate tidal flushing suggested by EPA guidelines.

Pumps Off vs. Pumps On

The value of V_P in Equation 1 represents the volume change of the system over one tidal cycle (UOG 2006). When the MGS pumps remove water from the Edison Canal, the same volume of water is replaced by ocean water drawn in through Channel Islands Harbor entrance. This flow of water contributes to flushing without affecting the level of the tide. Staff accounted for this additional mixing by adding the volume of pumped water to the tidal prism (see **Appendix SW-3 Figure 4**).

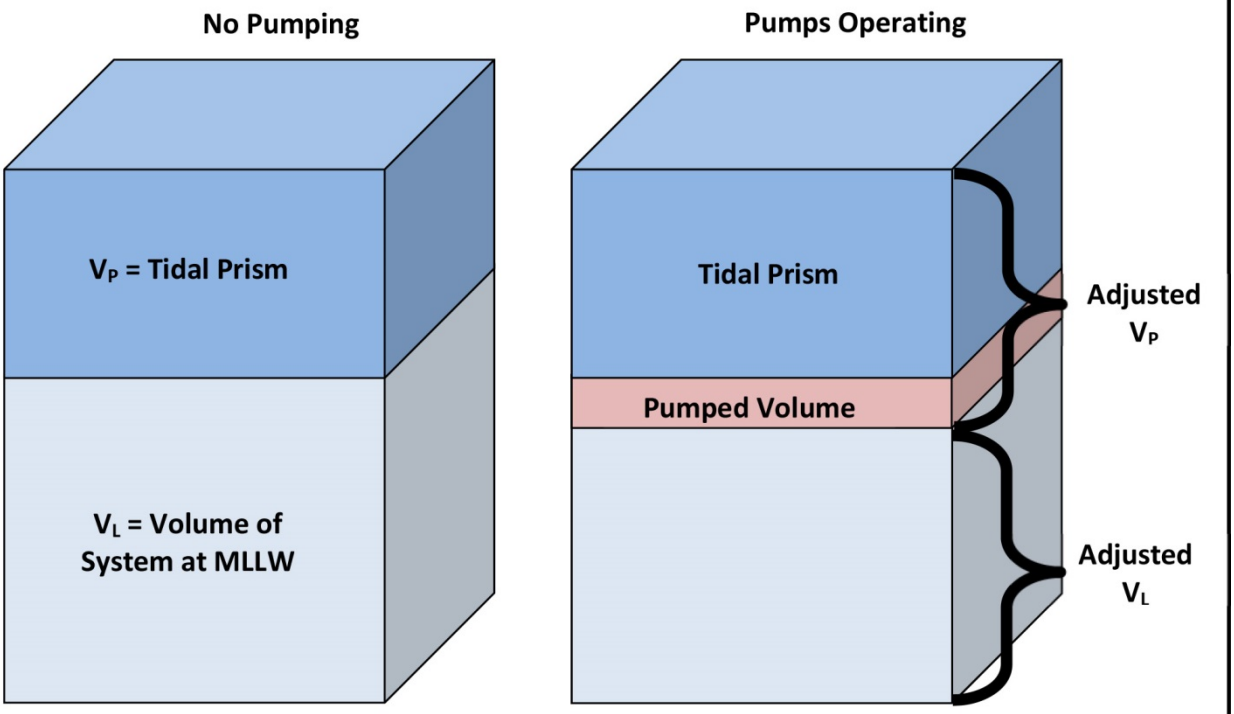
The pumped volume assumes that pumps operate continuously and at full capacity. There are four 44,000–gallon-per-minute (gpm) pumps serving MGS Units 1 and 2, two pumps for each unit. Staff calculated the number of days to flush 70 percent of the water system when all four pumps are operating, when two pumps are operating, and under tide currents alone (no pumping). The same calculations were made for flushing 90 percent of the water system. The variables used for each scenario are summarized in **Appendix SW-3 Table 3**.

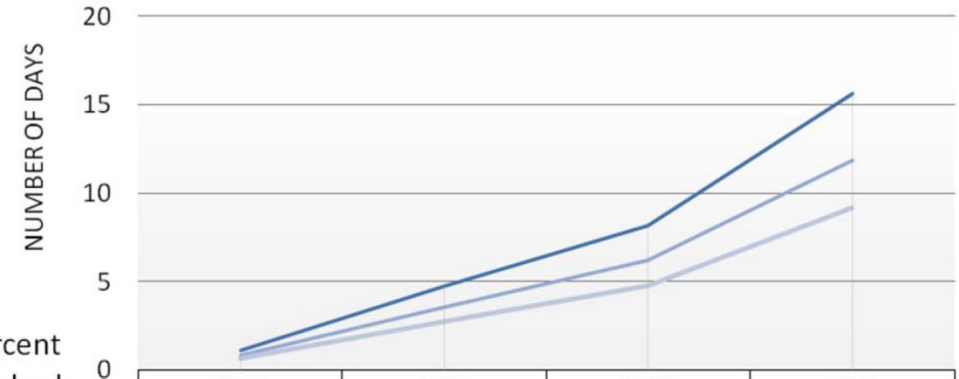
Appendix SW-3 Table 3
Values Used for Equation 1

Percent flushed	**70%**	**90%**	
C_o	100	100	initial concentration
C_n	30	10	final concentration
α	0.33	0.33	fractional rate of exchange
Pumps operating	**None**	**2 pumps**	**4 pumps**
Pumped volume (ft^3)	0	16,940,000	33,880,000
V_P	78,948,144	95,888,144	112,828,144
V_L	164,264,760	147,324,760	130,384,760
Total volume (ft^3)	243,212,904	243,212,904	243,212,904

APPENDIX SW-3 - FIGURE 4

Puente Power Project – Pumps Off vs. Pumps On





Percent Flushed	15%	50%	70%	90%
No Pumping	1.1	4.7	8.2	15.6
Two Pumps	0.8	3.6	6.2	11.8
Four Pumps	0.6	2.8	4.8	9.2

RESULTS

Calculated flush times are graphed in **Appendix SW-3 Figure 4** and show that:

3. Tidal currents alone do not provide adequate flushing. The EPA guideline recommends a flush time of one day to "refresh" from 70 perfect to 90 percent of the total volume of water. Staff calculations show that the one day flush time would, at best, refresh 15 percent of the water. Using the same ideal mixing assumptions, flush times calculated to reach 70 percent and 90 percent are 8.2 days and 15.6 days, respectively. Actual flush times are expected to be longer than these calculated values.

4. MGS pumping improves circulation, but flush times are still well below EPA guidelines. Using ideal mixing assumptions, staff calculations show that MGS pumping might improve flush times by, at best, 40 percent. This is a relative comparison and actual flush times are expected to be longer than calculated values.

DISCUSSION

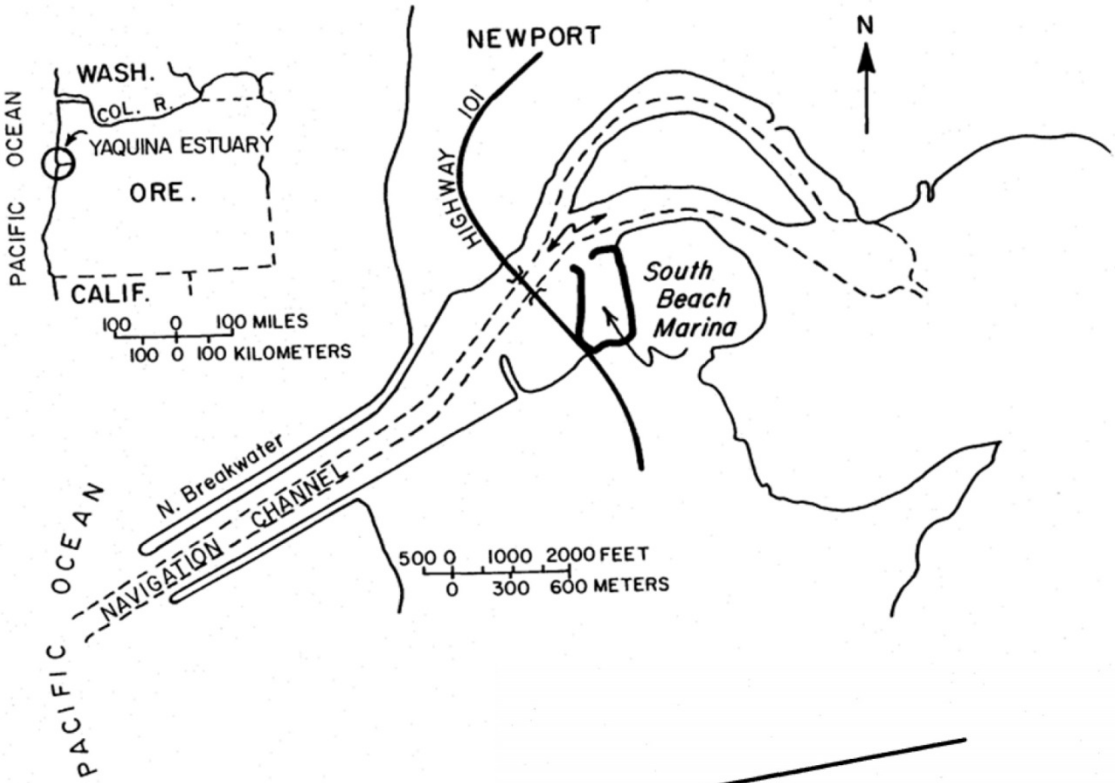
Equation 1 is an example of a simple one dimensional model also known as a low-order box model. As mentioned above, an important assumption with the basic tidal prism method is that the system is well mixed between incoming and outgoing tides. The more complex a system is with multiple areas of inefficient mixing, the more error is introduced when applying a simple box model.

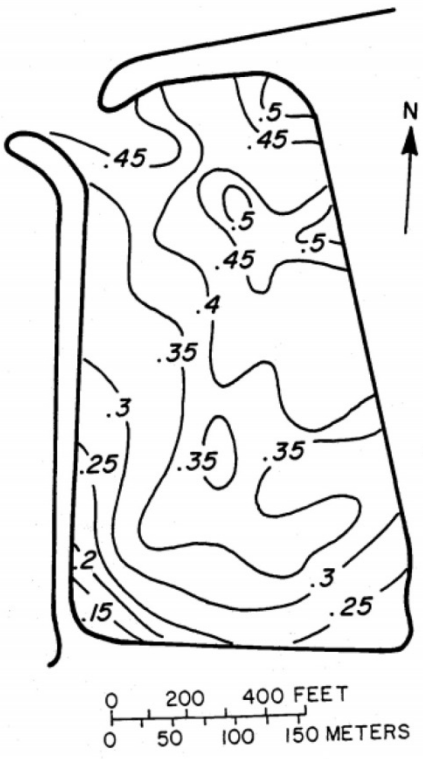
Knowing that the calculated values are underestimations, staff's intention is to estimate a flush time what would represent the absolute lower limit (least number of days) by assuming the known exchange rate of a well flushed marina. South Beach Marina in Oregon is a simple marina with good hydraulic characteristics and good exchange due to strong currents. **Appendix SW-3 Figure 5** shows the fraction rate of exchange at different locations of the marina, with the most mixing occurring near the marina entrance and least occurring in the south corners.

In comparison, the configuration of Channel Islands Harbor system is very complex, consisting of an elongated harbor with one entrance, a residential marina with multiple segments constructed using about eight miles total of reinforced concrete seawall, and a non-navigable canal over two miles long (see **Appendix SW-3 Figure 3**). The EPA guidelines for marina flushing management measures recommends that new marina or expanding marinas include as few enclosed water sections or separated basins as possible to promote circulation within the entire basin. If possible, establish two openings at opposite ends of the marina to promote flow-through currents (USEPA 2001). Generally, a rectangular basin is accepted as the best geometric shape for maximizing both the number of boat slips and basin circulation. To maximize flushing and minimize waves, the basin should have as few vertical walls as possible, interior corners gently rounded with constantly changing radii, and a bottom sloped toward the exit and main waterway. The flushing potential of several conceptual marina basin

APPENDIX SW-3 - FIGURE 5

Puente Power Project – South Beach Marina





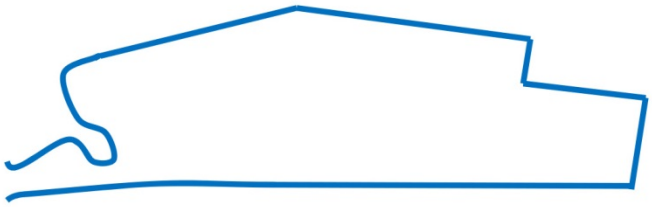
Above: Location map of South Beach Marina and Yaquina Estuary

Right: Isopleths of Fractional Exchange Rate (from hydraulic modeling)

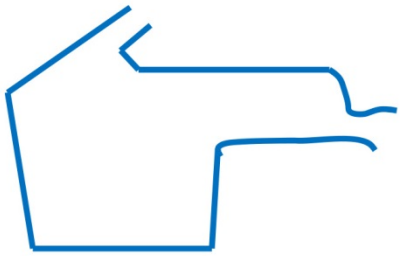
CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: USEPA 1981

APPENDIX SW-3 - FIGURE 6

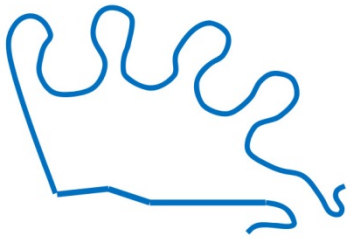
Puente Power Project – Conceptual Marina Configurations and Flushing Potential



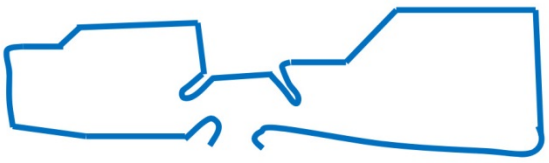
Rectangular Basin
Asymmetrical Single Entrance
Moderate Flushing Potential



Rectangular Basin
Two-Channel Entrance
Good Flushing Potential



Pod Type Development Marina
Asymmetrical Entrance
Poor Flushing Potential



Rectangular Basin
Single Symmetrical Entrance
Good Flushing Potential



Finger Canal
Poor Flushing Potential

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: USEPA 1985

As expected, staff's calculations show that MGS pumping improves circulation using Equation 1. However, the estimate of a 40 percent improvement is highly questionable because of the system's complex configuration. While researching information to collect data for this study, staff learned that development of Channel Islands Harbor and the Mandalay Bay marina have significantly affected water circulation over the years. When MGS Units 1 and 2 began operating in 1959, the Edison Canal was originally connected to Port Hueneme, located approximately 4.5 miles southeast of the MGS. At that time the canal was a relatively straight path and the only open water area was Port Hueneme. Construction of Channel Islands Harbor in 1965 relocated the connection of the Edison Canal to ocean water (GENON 2011). MGS cooling water no longer passed through Port Hueneme, but instead flowed through Channel Islands Harbor (see **Appendix SW-3 Figure 7**). The following 40 years saw expansions to the harbor and residential developments that increased the area of open water more than 300 acres. When the final phase of construction to Mandalay Bay was complete in 2008, the entire configuration was able to accommodate over 3,000 boat slips for residential, commercial, and recreational uses (see **Appendix SW-3 Figure 8**).

CONCLUSION

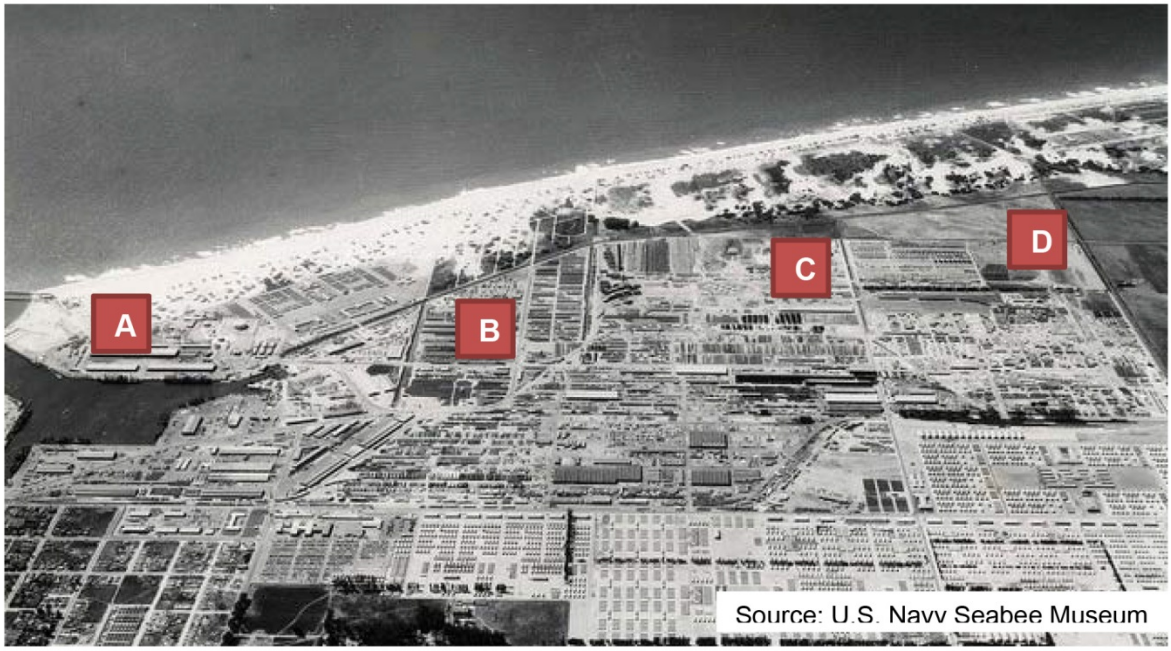
Staff used a simple one-dimensional model to estimate the 70 percent and 90 percent flush times for the Channel Islands Harbor system (includes Mandalay Bay marina and Edison Canal). Results show that flush times, under tidal flows only, are significantly below EPA guideline recommendation to reach between 70 and 90 percent flushing by one day. Even with ideal mixing assumptions, calculated flush times to reach 70 percent and 90 percent are 8.2 days and 15.6 days, respectively. Actual flush times are expected to be longer than these calculated values because the system's geometric complexity hinders tidal mixing.

MGS pumping improves circulation, but flush times are still well below EPA guidelines. Over the years, the entire system (harbor, marina, and canal) has increased in size and geometric complexity. With each expansion project, overall circulation has likely worsened. Staff's calculations show an improvement of 40 percent in flush times when all four MGS pumps operate continuously and at full capacity, but this estimate is highly questionable because of the system's complex configuration. Actual mixing rate and hours of pumping are much lower than staff's assumptions, so actual flush times are expected to be longer than calculated values. This suggests that the contribution of MGS pumping to flush time is considerably less than staff's calculated estimates. When considering the fact that MGS only produces a small fraction of its total maximum capacity of power generation, its contribution to flush time becomes significantly less.

Staff concludes that any impacts from shutting down the MGS pumps are insignificant. Measures that are much more aggressive are needed to improve water circulation that meets the EPA guideline.

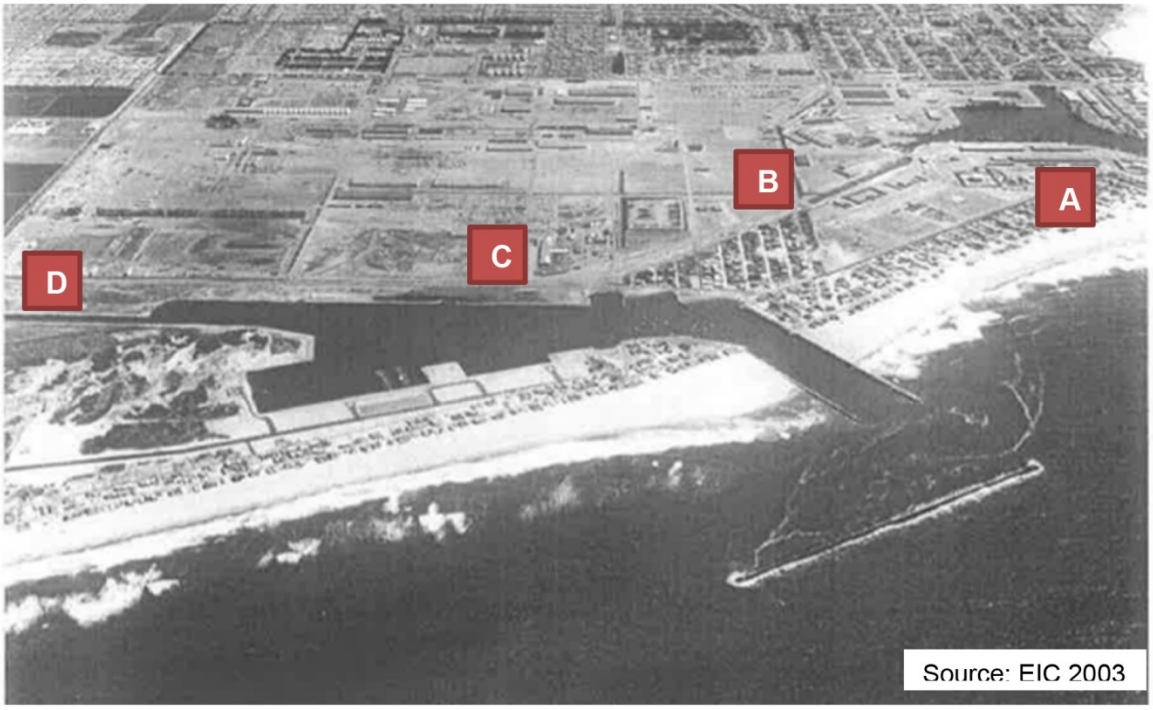
APPENDIX SW-3 - FIGURE 7

Puente Power Project – Relocation of Edison Canal Connection to Pacific Ocean



Above: View of the shoreline facing west taken in 1944. Port Hueneme [A] connects to a drainage canal located along the east edge of the sand dunes toward McGrath Lake. This canal was later directed to supply cooling water to MGS.

Below: View of the shoreline facing east taken in 1965. Construction of Channel Islands Harbor [C] cuts canal flow [B] from Port Hueneme [A]. The canal continues north [D] to the MGS site.



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APPENDIX SW-3 - FIGURE 8

Puente Power Project – Development of Channel Islands Harbor and Mandalay Bay



Source: COO 2015m

Source: TN207179

Above: 1999
Highlighted area shows growth since the official opening of Channel Islands Harbor in 1965. The blue line shows the boundary between Mandalay Bay and Channel Islands Harbor.

Left: 2013
Highlighted area shows the final phase of development completed in 2008.

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

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TRAFFIC AND TRANSPORTATION

Andrea Koch and Ashley Gutierrez

SUMMARY OF CONCLUSIONS

Staff has analyzed the information provided in the application for certification (AFC) and acquired from other sources to determine the potential for the Puente Power Project (P3) to cause significant impacts to the surrounding traffic and transportation system. Staff has also evaluated mitigation measures in the form of conditions of certification that could reduce or eliminate the significance of these impacts.

As currently proposed, the construction and operation of P3 could result in significant impacts to the nearby traffic and transportation system. Staff has determined that with implementation of staff's proposed conditions of certification, impacts from P3 to the surrounding traffic and transportation system would be less than significant. Condition of Certification **TRANS-2** would require implementation of a Traffic Control Plan (TCP) that would reduce the potential for accidents caused by construction traffic exiting the project site to travel northbound on Harbor Boulevard. Conditions of Certification **TRANS-6** and **TRANS-7** would mitigate potentially significant impacts to aviation from the thermal plumes that P3 would generate from the combustion turbine generator (CTG) stack. Condition of Certification **TRANS-6** would require obstruction marking and lighting of the CTG stack to alert pilots of the location of the plumes at night. Condition of Certification **TRANS-7** would require the project owner to work with the Federal Aviation Administration (FAA) and the Oxnard Airport Manager to notify all pilots using the Oxnard Airport and airspace above the P3 site of potential plume hazards.

With implementation of the proposed conditions of certification (**TRANS-1** through **TRANS-7**), P3 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.

INTRODUCTION

In compliance with California Environmental Quality Act (CEQA) and Energy Commission requirements, this analysis identifies P3's potential impacts to the surrounding traffic and transportation system and proposes mitigation measures (conditions of certification) that would avoid or reduce these impacts to a less than significant level. This analysis also addresses the project's consistency with applicable federal, state, and local transportation-related LORS.

SETTING

The proposed P3 project site is located in the city of Oxnard in Ventura County. P3 would be constructed on approximately 3 acres of the northwest portion of the existing 36-acre Mandalay Generating System (MGS) property at 393 North Harbor Boulevard. P3 would replace two gas-fired steam-generating units (Units 1 and 2) at the existing MGS with a new CTG and associated ancillary facilities.

Regional access to the project site would be from Highway 101. Local access would be from Harbor Boulevard, the direct access to the project site, and also from Gonzales Road, West Fifth Street, and Victoria Avenue. The nearest airport is Oxnard Airport, approximately 1.9 miles southeast of P3, and there are also railways nearby. For maps of the project site in relation to the local and regional traffic and transportation systems, see **Traffic and Transportation Figure 1 – Local Traffic and Transportation Setting** and **Figure 2 – Regional Traffic and Transportation Setting.**

The following freeways and roads provide access to P3 and may be impacted by construction and operation traffic.

U.S. Highway 101

U.S. Highway 101 (also known as Ventura Freeway in the project area) is a major 1,540-mile long north-south freeway that extends from Washington State to California. In the general area of the project, Highway 101 runs northwest-southeast, provides three lanes in each direction, and has junctions with State Route (SR) 1, SR 232 and SR 34. Commuters traveling between Ventura, Los Angeles, and Santa Barbara heavily use this route, as do people traveling seasonally for vacations along the coast. Access to the P3 site from Highway 101 is from Victoria Avenue.

Harbor Boulevard

Harbor Boulevard is a north-south, four-lane secondary arterial located east of MGS that provides primary access to the proposed project site via an unsignalized T-intersection (VCTC 2009). South of its intersection with West 5th Street, Harbor Boulevard transitions from a two-lane arterial to a four-lane arterial. The posted speed limit for Harbor Boulevard is 50 mph. Harbor Boulevard crosses Edison Canal via Bridge 550 just south of the project site.

Gonzales Road

Gonzales Road is an east-west arterial located north of the P3 site. From Harbor Boulevard to Victoria Avenue, Gonzales Road is classified as a two-lane local arterial (VCTC 2009). It has a posted speed limit of 55 mph and is a designated truck route (VCTC 2009).

Victoria Avenue

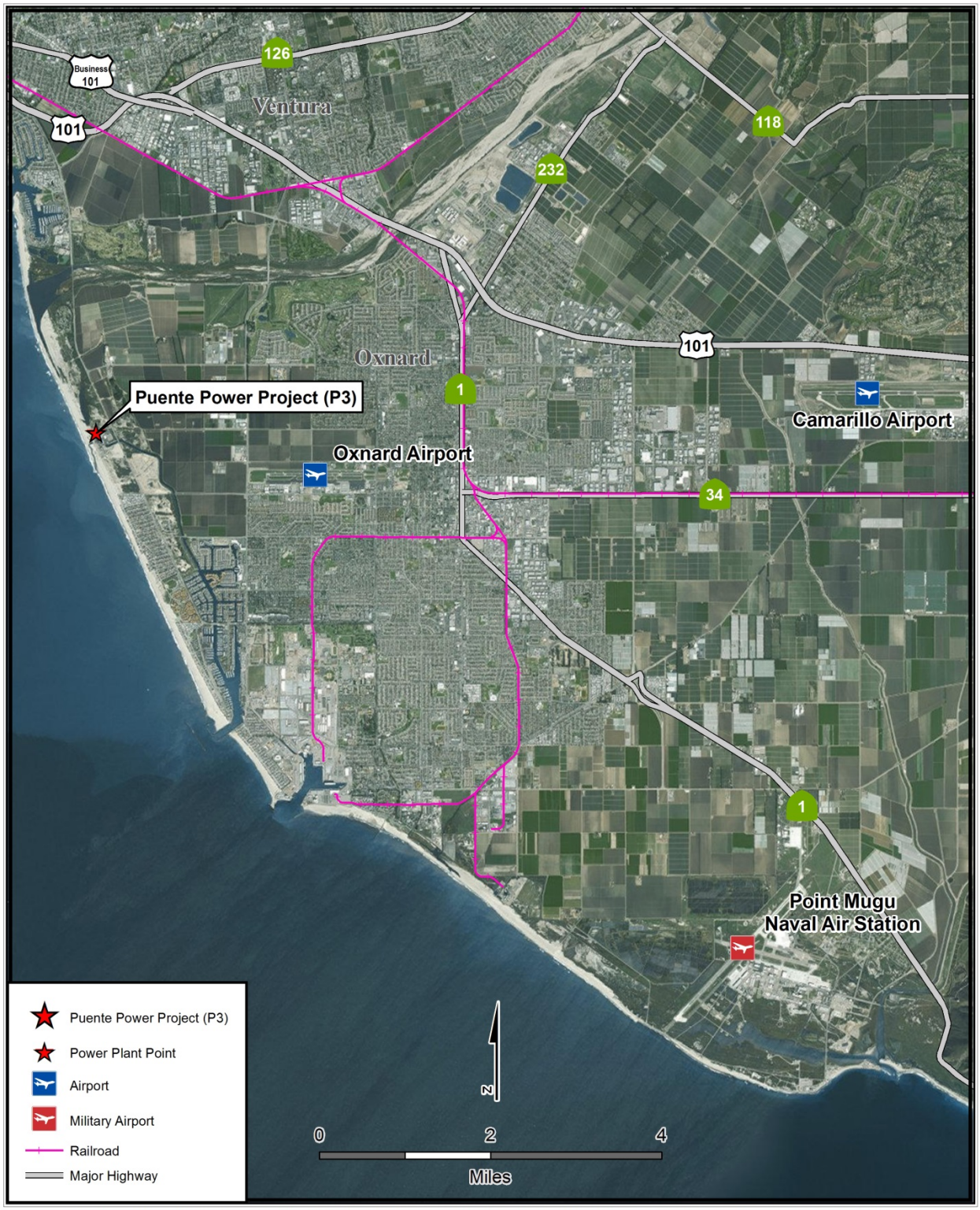
Victoria Avenue is a north-south primary arterial located east of the project site that provides regional access to P3 from Highway 101 (VCTC 2009). It is a divided four-lane facility and has a posted speed limit of 55 mph. It is a designated truck route (VCTC 2009).

TRAFFIC AND TRANSPORTATION - FIGURE 1
Puente Power Project - Local Traffic and Transportation Setting



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: ESRI Imagery, California Department of Transportation Data

TRAFFIC AND TRANSPORTATION - FIGURE 2
Puente Power Project - Regional Traffic and Transportation Setting



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: ESRI Imagery, California Department of Transportation Data

West 5th Street

West 5th Street is an east-west arterial located south of the project site. Its roadway classification varies. From Harbor Boulevard to Victoria Avenue, it is classified as a local arterial. From Victoria Avenue to Rice Avenue, it is classified as a secondary arterial, with the exception of a segment between Ventura Road and Oxnard Boulevard which is classified as a local arterial (VCTC 2009). Approximately one mile southeast of the project site, West 5th Street crosses the Edison Canal. West 5th Street is a truck route (VCTC 2009).

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Traffic and Transportation Table 1 provides a general description of adopted federal, state, and local LORS that apply to this project and pertain to traffic and transportation. As part of staff's analysis of P3 traffic and transportation impacts, staff evaluated the project's compliance with these LORS.

Traffic and Transportation Table 1
Laws, Ordinances, Regulations, and Standards

Applicable LORS	Description
Federal	
Code of Federal Regulations Title 49, Subtitle B: Sections 171-177 and 350-399	Requires proper handling and storage of hazardous materials during transportation.
Code of Federal Regulations Title 14 Aeronautics and Space, Part 77 - Objects Affecting Navigable Airspace	Establishes standards for determining physical obstructions to navigable airspace; sets noticing and hearing requirements; provides for aeronautical studies to determine the effect of physical obstructions on the safe and efficient use of airspace; and oversees the development of antenna farm areas.
State	
California Vehicle Code: Div. 2, Chap. 2.5; Div. 6, Chap. 7; Div. 13, Chap. 5; Div. 14; Div. 14.1; Div. 14.3; Div. 14.7; Div. 14.8; & Div. 15	Includes regulations pertaining to: licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and the transportation of hazardous materials. Addresses the Commission of Highway Patrol's authority to issue licenses for the transportation of hazardous materials.
California Streets and Highway Code: Div.1, Chap. 1, Article 3, Section 117; Div. 1, Chap. 3; Div. 2, Chap. 5.5 and 6	Includes regulations for the care and protection of state and county highways and provisions for the issuance of written permits. Requires permits for the location in the right-of-way (ROW) of any structures or fixtures necessary to telegraph, telephone, or electric power lines or of any ditches, pipes, drains, sewers, or underground structures.
California Health and Safety Code, Section 25160 et seq.	Pertains to operators of vehicles transporting hazardous materials; promotes safe transportation of hazardous materials.
State of California Department of Transportation (Caltrans), Caltrans Guide for the Preparation of Traffic Impact Studies	Caltrans' target level of service (LOS) for state highway facilities is at the transition between LOS C and LOS D. However, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the target LOS. If an existing state highway is operating at less than the appropriate target LOS, the existing measure of effectiveness should be maintained.
Local	
City of Ventura (CEC 2016a)	LOS E is acceptable at freeway interchange intersections, and LOS D is acceptable at the principal intersections within the city. Principal intersections are intersections that are regularly monitored by the city

	as a gauge of the operation of the city's circulation system. The city does not have an LOS standard for non-principal intersections, except for those that are located on the Congestion Management Program (CMP) network, at which the CMP level of service standard of LOS E is applicable.
County of Ventura General Plan, Transportation/Circulation Policies, Section 4.2.2	Policy 4.2.2-3: The minimum acceptable LOS for road segments and intersections within the Regional Road Network and Local Road Network shall be as follows: a) LOS D for all county thoroughfares and federal highways and state highways in the unincorporated area of the county… c) LOS C for all county-maintained local roads d) At any intersection between two roads, each of which has a prescribed minimum acceptable LOS, the lower LOS of the two shall be the minimum acceptable LOS for that intersection.
2009 Ventura County Transportation Commission, Congestion Management Program, Chapter 2	2. Sets a minimum LOS of "E" for the CMP road network. The minimum standard of LOS E only applies to the CMP; local agency LOS minimum standards may be higher than the CMP minimum.
City of Oxnard 2030 General Plan, Infrastructure and Community Services Element	Policy ICS-2.6: Reduction of Construction Impacts Minimize and monitor traffic and parking issues associated with construction activities, require additional traffic lanes and/or other traffic improvements for ingress and egress for new developments for traffic and safety reasons, where appropriate.
	Goal ICS-3: Maintain LOS C at designated intersections, unless otherwise reduced by city council direction. Policy ICS-3.1: CEQA Level of Service Threshold Requires level of service C as the threshold of significance for intersections during environmental review.
	Policy ICS-4.4: Truck Route Compliance Work with agencies and commercial businesses involved with goods movement to ensure that truck routes are adhered to by commercial vehicle drivers.
	Policy ICS-9.2: Development has Adequate Parking Review development proposals to encourage shared parking use and ensure adverse parking impacts are minimized or avoided.
City of Oxnard 2030 General Plan, Safety and Hazards Element	Policy SH-7.2: Handling of Hazardous Materials Requires that hazardous materials are transported within the city in a safe manner and in compliance with local, state and federal standards.
Oxnard Municipal Code, Sec. 19-206	Requires an encroachment permit to conduct construction activities within city rights-of-way.
Oxnard Municipal Code, Sec. 19-241	Requires a special permit to operate or move an overweight vehicle on city streets or highways.

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 that 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, dangerous intersections, or glint or glare) or incompatible uses (e.g., farm equipment);

5. conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities;

6. result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;

7. produce a thermal plume in an area where flight paths are expected to occur; or

8. have individual environmental effects that, 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 or compound or increase other environmental impacts.

Level of Service and Study Locations

Level of service is a generally accepted measure used by traffic engineers and planners to describe and quantify the traffic congestion level on a particular roadway or intersection in terms of speed, travel time, and delay. The *Highway Capacity Manual*

2010[1] includes six levels of service for roadways and intersections. These levels of service range from LOS A, the best and smoothest operating conditions, to LOS F, the worst, most congested operating conditions.

Staff reviewed the following locations on the surrounding roadway network for potential project impacts to LOS:

Freeways and Roadways:

- Highway 101- west of Victoria Avenue
- Highway 101- east of Victoria Avenue
- Harbor Boulevard- north of Gonzales Road
- Harbor Boulevard- between Gonzales Road and MGS Entrance
- Harbor Boulevard- between MGS Entrance and West 5th Street
- Harbor Boulevard- south of West 5th Street
- Gonzales Road- between Harbor Boulevard and Victoria Avenue
- Victoria Avenue- north of Gonzales Road
- Victoria Avenue- between Gonzales Road and West 5th Street
- West 5th Street- west of Victoria Avenue

Intersections:

- Victoria Avenue and Gonzales Road
- Victoria Avenue and Doris Avenue
- Victoria Avenue and West 5th Street
- Harbor Boulevard and Gonzales Road
- Harbor Boulevard and MGS Entrance
- Harbor Boulevard and West 5th Street

Staff used the LOS standards of Caltrans, Ventura County, the Ventura County Transportation Commission, and the cities of Oxnard and Ventura, identified in **Table 1** above, as significance thresholds to determine whether P3-generated traffic impacts would be significant.

DIRECT/INDIRECT TRAFFIC AND TRANSPORTATION IMPACTS AND MITIGATION

The direct and indirect traffic and transportation impacts of the proposed P3 project are discussed in this subsection.

[1]The *Highway Capacity Manual* (HCM) is the most widely used resource for traffic analysis. The Highway Capacity Manual is prepared by the Transportation Research Board Committee on Highway Capacity and Quality of Service. The current edition was published in 2010.

Construction Traffic

If approved, construction of P3 would begin in October 2018 and be completed by June 2020, a total construction period of 21 months. Peak construction would be during the 8th month of construction in May 2019. Construction would generally occur between 7 AM and 6 PM. During the start-up and testing phase of the project, some construction activities may occur 24 hours a day, 7 days a week (PPP 2015a, p. 4.12-7).

For access to the project site during construction, most construction vehicles (including both worker and truck traffic) would travel northbound or southbound on Highway 101, exiting to travel south on Victoria Avenue, west on Gonzales Road, and south on Harbor Boulevard to the MGS driveway (PPP 2015a, Figure 4.12-8).

Worker Traffic

The applicant and Socioeconomics staff assume that at least 90 percent of the P3 construction workforce would commute from locations nearby in Ventura and Los Angeles counties due to the high availability of workers (PPP 2015a, p. 4.10-8). (See the **Socioeconomics** section of this document for more information.) Each construction worker would generally work 10-hour shifts comprising a 50-hour work week. The average size of the workforce over the entire construction period would be approximately 45 workers.

Analysis of P3 construction impacts focuses on the periods of peak construction and MGS demolition, which would employ the highest number of workers compared to other phases of construction, generate the most vehicle trips, and result in the worst-case scenario for traffic impacts. MGS demolition traffic is similar to P3 peak construction traffic, so this analysis more specifically analyzes P3 peak construction traffic.

The peak construction period in May 2019 would involve 90 construction workers. Assuming the worst-case scenario, in which each construction worker commutes individually, workers would make approximately 180 daily one-way trips during the peak construction month (90 one-way trips in and 90 one-way trips out). Ninety percent of worker trips would occur prior to morning peak hours, while 10 percent would arrive during morning peak hours (7-9 AM). Sixty percent of construction workers would depart during evening peak hours (4-6 PM), while the remaining 40 percent would depart early in the evening before the evening peak. This would result in 9 one-way workforce vehicle arrival trips during the morning peak hours and 54 one-way workforce vehicle departure trips during the evening peak hours.

Truck Traffic

Prior to the peak construction month of May 2019, approximately 11,400 cubic yards of excess fill would be removed from the project site for site preparation over a five-month period from November 2018 to March 2019. Approximately 950 truck trips would be needed with a maximum of 24 truck roundtrips per day. The majority of these trips would not take place during the peak hour.

Peak construction would generate approximately five daily truck roundtrips, with up to two one-way truck trips occurring during the morning peak hours and none during the evening peak hours. For this traffic analysis, truck trips were converted to passenger car equivalent (PCE) trips at a ratio of three passenger cars for each truck, resulting in 15 daily PCE truck roundtrips (30 daily one-way PCE truck trips) and six one-way PCE peak hour truck trips.

Trucks would likely travel the same route to the P3 site as the majority of the construction worker traffic, which is from Highway 101 to Victoria Avenue, Gonzales Road, and Harbor Boulevard. Both Victoria Avenue and Gonzales Road are designated truck routes (VCTC 2009). At least several heavy haul trucks would access the site via an undetermined route after transporting heavy equipment from the Union Pacific Railroad switchyard in Oxnard. (See the discussion later in this section under "Rail Service".)

Total Construction Traffic

The total number of workforce and truck trips generated during peak construction would be 210 daily one-way trips (180 one-way worker trips added to 30 one-way PCE truck trips). Approximately 69 of these one-way trips would occur during peak hours: 15 one-way trips during the morning peak and 54 one-way trips during the evening peak. See **Traffic and Transportation Table 2**, below, for details. This table summarizes all peak construction traffic generated by P3, including construction worker trips and delivery/haul truck trips. Staff used the total construction traffic shown in this table to analyze P3's potential construction traffic impacts.

Traffic and Transportation Table 2
Total Daily Trips during Peak Construction

Vehicle Type	Daily Roundtrips	One-Way Daily Trips	One-Way AM Peak Hour Trips	One-Way PM Peak Hour Trips
Construction Worker Vehicles	90	180	9	54
Trucks (Delivery/Haul Vehicles) (PCE)[1]	15	30	6	0
Total	105	210	15	54

[1] PCE, or passenger car equivalent, is a conversion unit for comparing the traffic impacts of a large truck with the traffic impacts of a smaller car. Here, one truck trip is equivalent to three PCE.
Source: PPP 2015a, p. 4.12-22

Staff compared traffic LOS on nearby roads, freeways, and intersections during baseline 2015 conditions and during peak P3 construction. **Traffic and Transportation Table 3**, below, shows this comparison for study freeway and roadway segments. As reflected in the table, all study roadway segments would operate at or above the applicable LOS standard during peak construction. However, the two freeway segments, Highway 101 west of Victoria Avenue and Highway 101 east of Victoria Avenue, do not currently meet Caltrans' LOS standard of "C" and would also not meet this standard during peak construction. Highway 101 west of Victoria Avenue currently operates at LOS D, and with 84 daily one-way trips added during peak construction,

would continue to operate at LOS D. Highway 101 east of Victoria Avenue currently operates at LOS F, and with 94 daily one-way trips added during peak construction, would continue to operate at LOS F. Although Caltrans provides an LOS standard of "C" for highways under its jurisdiction, Caltrans' policy is that if an existing state highway is operating at less than the appropriate target LOS, the existing measure of effectiveness (in this case, the existing LOS) should be maintained (CT 2002). The freeway segments would maintain their existing LOS during peak construction, and therefore, P3's direct impacts to these freeway segments would be acceptable, according to this policy. However, P3 would contribute to cumulative traffic impacts on Highway 101 east of Victoria Avenue, which is already heavily impacted by "past" projects which have generated large amounts of traffic as reflected in the baseline LOS F conditions of this segment. See the discussion on cumulative impacts later in this section.

Traffic and Transportation Table 3
Roadway Average Daily Traffic (ADT) and LOS: A Comparison between Baseline and Peak Construction Conditions

No.	Freeway/Road Segment	2015 ADT and LOS	2015 Plus Peak Construction ADT and LOS	Agency or Agencies with Jurisdiction	Most Restrictive LOS Standard[1]
1	Harbor Boulevard, North of Gonzales Road	18,030 LOS A	18,040 LOS A	County of Ventura, Ventura County Transportation Commission, City of Ventura	LOS D[2]
2	Harbor Boulevard, North of MGS Driveway	17,090 LOS A	17,258 LOS A	County of Ventura, Ventura County Transportation Commission	LOS D[2]
3	Harbor Boulevard, South of MGS Driveway	17,070 LOS A	17,113 LOS A	City of Oxnard, Ventura County Transportation Commission	LOS E[3]
4	Harbor Boulevard, South of West 5th Street	15,850 LOS A	15,860 LOS A	City of Oxnard, Ventura County Transportation Commission	LOS E[3]
5	Gonzales Road, East of Harbor Boulevard	3,550 LOS A	3,707 LOS A	County of Ventura, Ventura County Transportation Commission	LOS D[2]
6	Victoria Avenue, North of Gonzales Road	43,810 LOS D	43,988 LOS D	City of Ventura, County of Ventura, Ventura County Transportation Commission	LOS D[2]

No.	Freeway/Road Segment	2015 ADT and LOS	2015 Plus Peak Construction ADT and LOS	Agency or Agencies with Jurisdiction	Most Restrictive LOS Standard[1]
7	Highway 101, West of Victoria Avenue	119,000 LOS D	119,084 LOS D	City of Ventura, Ventura County Transportation Commission, Caltrans	LOS C. If operating at less than this, the existing LOS should be maintained.[4]
8	Highway 101, East of Victoria Avenue	139,000 LOS F	139,094 LOS F	City of Ventura, County of Ventura, Ventura County Transportation Commission, Caltrans	LOS C. If operating at less than this, the existing LOS should be maintained.[4]
9	Victoria Avenue between Gonzales Road and West 5th Street	42,413 LOS C	42,440 LOS C	County of Ventura, City of Oxnard, Ventura County Transportation Commission	LOS D[2]
10	West 5th Street between Harbor Boulevard and Victoria Avenue	5,102 LOS A	5,126 LOS A	City of Oxnard	N/A- Staff selected LOS C[5]

[1] In several instances, there is more than one LOS standard which applies. In this column, staff has provided the most restrictive LOS standard.

[2] The most restrictive applicable LOS standard is Ventura County's standard of LOS D or above for all county thoroughfares and federal highways and state highways in the unincorporated area of the county.

[3] The most restrictive applicable LOS standard is the Ventura County Transportation Commission's standard of LOS E or above on CMP highways and roadways.

[4] The most restrictive applicable LOS standard is Caltrans' target LOS for state highway facilities, which is at the transition between LOS C and LOS D. However, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the target LOS. If an existing state highway is operating at less than the appropriate target LOS, the existing measure of effectiveness should be maintained.

[5] The city of Oxnard only provides LOS standards for intersections. Therefore, there is no applicable LOS standard for this road segment. Staff assigned a conservative threshold of LOS C.

Source: PPP 2015a, p.4-12-23; PPP 2015j, pp. 45-1 − 45-2; PPP 2015u, pp. 73-1 − 73-2

Traffic and Transportation Table 4, below, shows peak construction impacts to study intersections. For the morning and evening peak traffic hours, it compares baseline 2015 intersection delay and LOS to peak construction intersection delay and LOS. Prior to project construction, all intersections operate at an acceptable LOS during both the morning and evening peak hours, with the exception of the intersection of Harbor Boulevard and the MGS entrance. This intersection currently operates at LOS D during the morning peak hour and LOS E during the evening peak hour, exceeding the applicable LOS standard of "C". Peak construction would worsen operation conditions at this intersection. The morning peak hour LOS would degrade from LOS D to LOS E during peak construction. The evening peak hour LOS would remain at LOS E, but delay would be increased by almost 10 seconds. This intersection is controlled by a stop sign at the MGS exit driveway, with Harbor Boulevard uncontrolled and free-flowing, so delays would only affect traffic exiting the project site, not the general public. For this reason, staff does not consider impacts to LOS at this intersection as significant.

Traffic and Transportation Table 4
Peak Hour Intersection LOS: A Comparison Between Baseline and Peak Construction Conditions

#	Study Intersection	Year 2015 AM/PM Peak Hour Volume-to-Capacity and LOS		Year 2015 Plus Peak Construction AM/PM Peak Hour Volume-to-Capacity and LOS		LOS Standard
		AM	PM	AM	PM	
1	Victoria Avenue/Gonzales Road	0.760 LOS C	0.776 LOS C	0.760 LOS C	0.790 LOS C	LOS D[2]
2	Harbor Boulevard/Gonzales Road	0.704 LOS C	0.694 LOS B	0.712 LOS C	0.694 LOS B	LOS D[2]
3	Harbor Boulevard/MGS Entrance	35.0 seconds[3] LOS D	35.6 seconds[3] LOS E	35.100 seconds[3] LOS E	45.200 seconds[3] LOS E	LOS C[1]
4	Harbor Boulevard/West 5th Street	0.739 LOS C	0.468 LOS A	0.739 LOS C	0.483 LOS A	LOS C[1]
5	Victoria Avenue/West 5th Street	0.558 LOS A	0.577 LOS A	0.558 LOS A	0.591 LOS A	LOS C[1]
6	Victoria Avenue/Doris Avenue	0.737 LOS C	0.658 LOS B	0.737 LOS C	0.658 LOS B	LOS D[2]

[1] City of Oxnard jurisdiction - LOS standard is "C" for intersections

[2] County of Ventura jurisdictions - LOS standard is "D" for county thoroughfares and intersections

[3] The measure of effectiveness (MOE) for unsignalized intersections is delay in seconds per vehicle.
Source: PPP 2015a, p.4.12-22; PPP 2015j, pp. 45-1 − 45-2; PPP 2015u, pp. 73-1 − 73-2

While peak construction of P3 would cause less than significant impacts to traffic LOS, staff is concerned that construction traffic, especially heavy haul vehicles, exiting the project site to turn left onto northbound Harbor Boulevard could potentially cause vehicular accidents. Construction vehicles would need to cross fast-moving southbound traffic (with a speed limit of 50 miles per hour) to make this turn, and as discussed earlier, the MGS driveway/Harbor Boulevard intersection is only controlled by a stop sign at the MGS driveway exit. To mitigate this potential hazard, staff is proposing Condition of Certification **TRANS-2**, which would require implementation of a Traffic Control Plan (TCP) requiring that heavy haul vehicles exit the site by turning right onto southbound Harbor Boulevard, unless a flagger is available to assist with a left turn onto northbound Harbor Boulevard. **TRANS-2** would also require signage along Harbor Boulevard warning drivers of construction traffic exiting the project site. In the AFC, the applicant also proposed implementation of a Traffic Control Plan, although staff is proposing that additional specifics be included, such as the above requirements for heavy haul vehicles exiting the site.

Heavy haul vehicles could pose hazards to motorists by damaging local roadway pavement surfaces. To mitigate this potential impact, staff has recommended Condition of Certification **TRANS-3,** which would require the project owner to restore all public roads, easements, and rights-of-way damaged by project-related traffic. With implementation of this condition, road damage would not cause significant impacts to motorist safety.

With implementation of **TRANS-1** through **TRANS-3**, construction traffic impacts would be less than significant.

Operation Traffic

If approved, the applicant anticipates that P3 would be operational by June 2020. Plant operation would require approximately 17 full-time employees, taken from existing MGS staff. The facility would be staffed 7 days a week, 24 hours a day. Normal operation of the plant would require some occasional deliveries and maintenance-related trips and would not increase operation traffic from existing MGS operation. It is expected the new project would increase aqueous ammonia deliveries by approximately 15 truck trips annually, but this increase is small and would not affect LOS. Operation traffic would be negligible and would not significantly impact daily LOS on nearby freeways, roadways and intersections.

MGS Decommissioning Traffic

MGS Units 1 and 2 would continue to operate until 2020, when they would be decommissioned. Decommissioning activities for MGS Units 1 and 2 would start no later than December 31, 2020 and would take approximately six months, ending in June 2021 (PPP 2015x, CEC 2016g). The decommissioning of MGS Units 1 and 2 would not generate additional traffic, as nine members of the existing MGS workforce would perform the work intermittently for three months while overseen by P3 staff, and no heavy construction equipment would be required. MGS decommissioning would not generate traffic impacts.

MGS Demolition Traffic

If the P3 is approved, demolition of MGS Units 1 and 2 would occur over approximately 15 months, from July 2021 through September 2022. There would be a peak demolition workforce of 74 workers during a five-month period between January and May 2022. Assuming each worker commuted alone, these workers would generate 148 one-way trips per day (PPP 2015x, CEC 2016g). It is assumed that at least 95 percent of the demolition workforce would commute from locations near the project site locally in Ventura and Los Angeles counties due to the high availability of workers. (See the **Socioeconomics** section of this document for more information.)

Demolition truck trips would peak during Month 9 of demolition, in March 2022, with an average of 11 trucks daily during a five-day work week from Monday through Friday. This equates to approximately 33 daily PCE truck roundtrips, or 66 PCE daily one-way truck trips. Most truck trips would not occur during the peak hour, which would reduce their traffic impacts. The demolition traffic route would be the same as that used for project construction (PPP 2015x).

Demolition traffic trips are summarized in **Traffic and Transportation Table 5**, below:

Traffic and Transportation Table 5
Total Daily Trips during Peak Demolition

Vehicle Type	Daily Roundtrips	One-Way Daily Trips
Construction Worker Vehicles	74	148
Trucks (Delivery/Haul Vehicles) (PCE)[1]	33	66
Total	107	214

[1] PCE, or passenger car equivalent, is a conversion unit for comparing the traffic impacts of a large truck with the traffic impacts of a smaller car. Here, one truck trip is equivalent to three PCE.
Source: PPP 2015x, p. 4-47

The total number of one-way daily demolition trips, 214, is slightly higher than the number of one-way daily peak construction trips, which is 210. Because the number of daily trips is similar, and because the traffic route would be the same, staff's traffic LOS analysis for peak construction also applies to peak demolition. Like peak construction, peak demolition would cause less than significant impacts to the traffic and transportation system with implementation of Conditions of Certification **TRANS-1** through **TRANS-3**.

Parking

The AFC states that adequate onsite parking would be provided, and parking outside of the MGS property would not be required. A total of 0.92 acre of existing paved on-site parking would be available for construction and demolition parking. An additional 4.76 acres would be available for construction materials storage and laydown and temporary offices.

Staff confirmed that the construction storage, laydown and parking areas would adequately accommodate construction and demolition parking. On average, a parking lot must have 350 square feet of space for every parked vehicle, which includes both the actual parking space and room for circulation. During peak construction, which would employ more workers than peak MGS demolition, the proposed project would require parking for approximately 90 construction worker vehicles. Using the standard of 350 square feet needed for each parking space, approximately 0.72 acre would be needed for construction vehicle parking, less than the 0.92-acre of parking provided. The remaining 4.76 acres of storage and laydown area could accommodate overflow parking if needed. Because P3 supplies sufficient space for on-site parking, the project would not result in any parking spill-over to sensitive areas and would not create any adverse impacts.

During project operation, 17 full-time employees drawn from the existing MGS workforce would work at P3. Not all employees would be on-site at the same time. P3 would use existing MGS parking consisting of 140 spaces, which is more than sufficient to accommodate all employee and visitor vehicles. There would be no parking impacts from operation of P3.

Hazardous Materials and Waste Transportation

Both the construction and operation of P3 would involve transportation of hazardous materials and waste to and from the site. The transport vehicles would be required to follow federal and state regulations governing proper containment vessels and vehicles, including appropriate identification of the nature of the contents. The applicant has stated in the AFC the project owner's intent to comply with these regulations. Condition of Certification **TRANS-4** requires the project owner to comply with applicable regulations and to contract with licensed hazardous materials delivery and waste hauler companies. Compliance with applicable hazardous materials and waste transportation regulations would ensure that there would be no significant impacts to roadways and the traveling public. See the **Hazardous Materials Management** and **Waste Management** sections of this document for more information.

Rail Service

The Coast Main Line, running between eastern Ventura County in the city of Simi Valley and western Ventura County in the city of Ventura, is the major railway in the project area (VCTC 2009). It is located approximately five miles east of P3 in the city of Oxnard and runs north/south through the northern portion of the city limits. The Coast Main Line provides commuter rail service, including Metrolink, the Amtrak Pacific Surfliner, and the Amtrak Coast Starlight, as well as freight service via Union Pacific (VCTC 2009).

The project applicant has proposed use of the Coast Main Line for transportation of most of the heavy equipment needed for construction, including the combustion turbine, generator step-up transformer, and associated components. Deliveries would be to the Union Pacific Railroad (UPRR) switchyard in Oxnard located approximately 5 miles southeast of the project site at the block formed by Highway 1 to the west, 3rd Street to the north, Rose Avenue to the east, and 5th Street to the south. Heavy haul trucks would make approximately three total deliveries during the project to transport the equipment from the switchyard to the project site. In the AFC, the applicant stated that the most

direct route from the UPRR switchyard is via 5th Street to Harbor Boulevard, then to the project site, a distance of approximately 5 miles. This is true, but part of 5th Street along this route is not a designated truck route (VCTC 2009, page 69, Exhibit 15). The applicant stated in the AFC the project owner's intention to comply with local jurisdictions' truck routes. Condition of Certification **TRANS-1** would ensure compliance by requiring the project owner to comply with local jurisdictions' limitations on truck routes.

The Ventura County Railway is another railway near the project site, transporting freight between the cities of Oxnard and Port Hueneme and U.S. Naval Base Ventura County. It is a short-line railroad operated by Rail America Corporation. At its point closest to the project site, where it interchanges with the Union Pacific Railroad at Oxnard (GW 2015, VCTC 2009), it is located approximately 4.5 miles southeast of P3. The project applicant does not propose use of this railroad for transporting construction equipment.

The project is not in the immediate vicinity of any of these railways, and the project would not obstruct railways or interfere with rail service. There would be no impacts to rail service.

Bus Service

Gold Coast Transit (GCT) provides bus service in western Ventura County, including the city of Oxnard. Near the proposed P3, two bus lines operate on Victoria Avenue. (GCT 2014). National bus service is provided by Greyhound Lines, which has a station in Oxnard (GH 2015). There are also various intercity bus routes serving Oxnard, such as the Coastal Express, Highway 101 and Conejo Connection, and CSUCI-Oxnard (VCTC 2015). There are no bus lines directly serving the proposed project site.

The project would add traffic to Victoria Avenue, where bus lines operate, but these vehicles would not cause traffic level of service to fall below acceptable standards. The project would not significantly delay bus service or obstruct bus infrastructure. Impacts to bus service would be less than significant.

Bicycle Facilities

The designated bicycle routes closest to the project site are:

- Harbor Boulevard, a Class II bike facility (bike lane)
- Gonzales Road, a Class II bike lane east of Victoria Avenue to Rice Avenue
- Victoria Avenue, a Class II bike lane between the Santa Clara River and Gonzales Road, and between Teal Club Road and the Port Hueneme city limit
- 5th Street, a Class II bike lane from Victoria Avenue to H Street (CO 2011b, VCTC 2015a)

Construction, demolition, and operation traffic would not result in significant LOS impacts and would not obstruct bike lanes; therefore, the project's impacts to bicycle facilities would be less than significant.

Pedestrian Facilities

Because the proposed project site is located in a rural area, there are minimal pedestrian activities and facilities nearby. There are no sidewalks or crosswalks within the immediate vicinity of the project site; the nearest sidewalks and crosswalks are located approximately one mile south of P3 on West 5th Street and Harbor Boulevard. Therefore, construction and operation of P3 and MGS demolition would not impact pedestrian activities or facilities.

Airports/Aviation Activities

Airports in the vicinity of the proposed P3 site are Oxnard Airport, Point Mugu Naval Air Station, and Camarillo Airport. The following aviation analysis focuses mostly on these airports. The airport closest to the project site, and therefore most likely to be affected by the proposed P3, is the Oxnard Airport. See **Traffic and Transportation Figure 2 – Regional Traffic and Transportation Setting** for the locations of these airports.

Oxnard Airport

The Oxnard Airport is a public non-hub airport owned by the county of Ventura, located approximately 1.9 miles southeast of P3. The Oxnard Airport is home to approximately 157 aircraft: 116 single-engine, 26 multi-engine, and 15 helicopter aircraft. Aircraft operations average 163 flights per day. Operations are approximately 50 percent local general aviation, 40 percent transient general aviation, 9 percent air taxi, and 1 percent military aviation (AIRNAV 2015a).

The Oxnard Airport has one runway, 7/25, which runs east-west and has a left-hand traffic pattern. It is 5,953 feet long and 100 feet wide. Runway 25 provides an instrument approach. The pattern altitude of the Oxnard Airport for single-engine aircraft is 1,000 feet above ground level (AGL). For multi-engine aircraft and jets, the pattern altitude is 1,400 feet AGL (AIRNAV 2015a).

Aircraft departing from or arriving at the Oxnard Airport could potentially pass over the proposed P3 site, although aircraft would not need to fly over the project site in order to enter or exit the traffic pattern. Any aircraft flying above the project site would normally be at altitudes higher than 1,045 feet above mean sea level (AMSL), which is equivalent to the airport's pattern altitude of 1,000 feet AGL. The reason is that aircraft departing the traffic pattern typically climb higher as they fly away from the airport, and similarly, aircraft arriving at the airport normally fly at higher elevations further away from the airport before descending to pattern altitude. The Final Staff Assessment (FSA) will include more information on flight paths and altitudes over the project site, after staff reviews flight tracking data that was recently provided by the FAA.

The proposed P3 site is located within the Oxnard Airport Study Area as defined by the Airport Comprehensive Land Use Plan (ACLUP) for Ventura County, where land use compatibility with the airport is more of a concern than compatibility of land uses further away from the airport (VCALUC 2000). However, it is not within the Oxnard Airport Sphere of Influence as defined in the City of Oxnard 2030 General Plan. The 2030 General Plan states that "The Oxnard Airport Sphere of Influence is a designated area for the coordination and review of land use proposals which may affect or be affected by the operations of the Oxnard Airport" (CO 2011a).

Point Mugu Naval Air Station

Point Mugu Naval Air Station is owned by the United States Navy and located approximately ten miles southeast of the P3 site. It is designated as a private use air station where naval aircraft are based and operate daily (AIRNAV 2015b). The airport has two runways, Runway 3-21 (running northeast-southwest), which is 11,102 feet long and 200 feet wide, and Runway 9-27 (running northwest-southeast), which is 5,502 feet long and 200 feet wide. Both runways have left-hand traffic patterns.

Point Mugu includes a 36,000 square-mile "Sea Range", an area over the Pacific Ocean off the coast of California stretching approximately from the United States/Mexico border at its southern end to the Cambria and San Simeon area at its northern end. A military training route called IR200 links the Sea Range with the military area located at China Lake (NAWCWD 2015). This military training route does not pass over the proposed P3 site.

It is unknown whether or not aircraft departing or arriving at the Point Mugu Naval Air Station regularly fly over the P3 site. As discussed earlier, the FSA will include more information on flight paths and altitudes over the project site, after staff reviews flight tracking data provided by the FAA.

Camarillo Airport

Camarillo Airport is a public airport owned by the County of Ventura, located approximately eight miles east of the P3 site. The airport is home to approximately 520 aircraft: 381 single-engine, 53 multi-engine, 36 jet, 20 helicopters, and 30 ultralight aircrafts. Aircraft operations average 374 flights per day. Operations comprise approximately 49 percent transient general aviation, 49 percent local general aviation, 2 percent air taxi, and less than 1 percent military aviation (AIRNAV 2015c).

Camarillo Airport has one runway, 8-26, which runs east-west and is 6,013 feet long and 150 feet wide. The Runway 8 side has a right-hand traffic pattern, while the Runway 26 side has a left-hand traffic pattern. The pattern altitude of the Camarillo Airport for single-engine aircraft is 800 feet AGL. For multi-engine and jet aircraft, the pattern altitude is 1,000 feet AGL (AIRNAV 2015c).

Occasional overflight of the project by air traffic originating from the Camarillo Airport is possible. As discussed earlier, the FSA will include more information on flight paths and altitudes over the project site, after staff reviews flight tracking data provided by the FAA.

Aviation Impacts

To assess P3's aviation impacts, staff examined whether the project's 188-foot-high CTG stack, 100-foot-tall transmission structures, and thermal plumes could obstruct or impair airspace, posing hazards to aircraft pilots and passengers.

CTG Stack and Transmission Towers/Obstruction of Airspace

According to Title 14 of the Code of Federal Regulations, Section 77.9(b)(1), for construction or alterations within 20,000 feet of an airport with a runway more than 3,200 feet in length, the FAA shall be notified if the height of the construction or

alteration exceeds an imaginary surface extending outward and upward at a slope of 100 to 1 from the nearest point of the nearest runway of the airport. The Oxnard Airport is located within 20,000 feet of the P3 site and has a runway exceeding 3,200 feet in length. Therefore, this regulation applies.

Proposed structures at the project site that are tall and could potentially obstruct airspace are the four 100-foot-tall transmission structures and the 188-foot-tall CTG stack. Staff found that the proposed transmission pole closest to the nearest airport runway at the Oxnard Airport would be approximately 9,916 feet from the runway, meaning that the threshold for FAA notification is 99.16 feet for this pole. The pole, at 100 feet, barely exceeds the threshold, if the threshold height is measured from ground level at the transmission pole site. However, if this threshold height is measured from the Oxnard Airport's elevation, which is 16 feet higher than the elevation of the transmission pole site (approximately 28 feet above sea level versus 12 feet above sea level, respectively), the transmission pole would be below the threshold elevation. In this case, the threshold at the transmission pole location would actually be 115.16 feet AGL (99.16 feet plus 16 feet), meaning that the 100-foot-tall transmission pole would not require FAA notification. The other transmission poles, which would also be 100 feet in height, would be located further from the runway and, given that the nearest pole does not meet the threshold, also would not require FAA notification.

The CTG stack would be located approximately 10,845 feet from the nearest runway of Oxnard Airport, meaning that any structure higher than 108.45 feet would require notification. Even when taking into account the fact that the CTG stack location is lower in elevation than the airport runway, the 188-foot-tall CTG stack exceeds this notification threshold. In compliance with FAA regulations, the applicant submitted Form 7460-1 "Notice of Proposed Construction or Alteration" to the FAA for the CTG stack. On October 7, 2015, the FAA issued a "Determination of No Hazard to Air Navigation" for the stack, concluding that it would not be a hazard to air navigation. The determination required that the applicant file an FAA Form 7460-2, Notice of Actual Construction or Alteration, within 5 days after the stack reaches its greatest height (FAA 2015). Staff has proposed Condition of Certification **TRANS-5** to verify that the applicant files this notice in compliance with FAA regulations. **TRANS-5** would also verify that the applicant files an FAA Form 7460-1, Notice of Proposed Construction or Alteration, with the FAA if any cranes or other construction equipment are used that would exceed a height of 188 feet, as required by the FAA's Determination of No Hazard for the CTG stack. With implementation of **TRANS-5**, P3's compliance with FAA regulations would be verified, and its physical structures would not constitute a hazard to air navigation.

The FAA's Determination of No Hazard stated that marking and lighting of the CTG stack are not necessary for aviation safety (FAA 2015). However, the FAA does not currently evaluate plume hazards as part of their hazards determination process. Because the CTG stack would emit thermal plumes that could be hazardous to aircraft, staff is proposing Condition of Certification **TRANS-6**, which would require that the project owner mark and light the CTG stack to alert pilots of the location of the source of the thermal plumes at night. (See more information below in the "Thermal Plumes" subsection.)

In conclusion, impacts to aviation from the project's CTG stack and construction cranes would be less than significant with the implementation of **TRANS-5** and **TRANS-6**.

Thermal Plumes

P3's CTG stack would produce thermal plumes. Thermal plume velocities would be greatest at the discharge point, with plume velocities decreasing with increasing altitude. Light aircraft flying through thermal plumes exceeding 4.3 meters/second (m/s)[2] in vertical velocity may experience moderate to significant turbulence, which could compromise pilot control and aircraft stability.

To determine whether the thermal plumes emitted from P3's CTG stack would exceed 4.3 m/s at altitudes where aircraft could fly, Energy Commission Air Quality staff modeled plume velocity for the project's CTG stack. Air Quality staff found that thermal plume vertical velocity exceeded 4.3 m/s up to an altitude of approximately 4,260 feet AGL. At altitudes higher than approximately 4,260 feet AGL, thermal plume velocity was below the critical 4.3 m/s threshold for endangering aircraft. See **Appendix TT-1** of this section for more information.

As discussed earlier, the FAA issued a Determination of No Hazard for the project's CTG stack. However, the FAA's review only considers hazards posed by physical structures, not plumes. To ensure that plumes associated with P3 operation do not impact aviation activities within the navigable airspace above the site, staff proposes implementation of Condition of Certification **TRANS-7.** It would require the project owner to work with the FAA and the Oxnard Airport Manager to notify all pilots using the Oxnard Airport and airspace above the P3 site of potential plume hazards. These activities would include, but not be limited to: the project owner working with the FAA in issuing a Notice to Airmen (NOTAM) of the identified plume hazard; working with the Oxnard Airport Manager to add a remark about the plume hazard to the Airport Traffic Information System (ATIS) and the Airport Facility Directory; and updating the Los Angeles Sectional Chart and other applicable airspace publications used by pilots to indicate that pilots should avoid direct overflight of P3 below 4,260 feet AGL. Proposed Condition of Certification **TRANS-6**, discussed earlier, would require lighting of the CTG stack to help pilots identify the location of the plume at night.

The airspace over P3 is not congested with air traffic, and the surrounding airspace is not restricted. There are no visual flight rule (VFR) routes directly over the project site. Therefore, staff concludes it is feasible for pilots to avoid overflight of P3, and that **TRANS-6** and **TRANS-7** are adequate to reduce any potential aviation impacts to a less than significant level.

Staff is working with the FAA to determine common flight paths and altitudes above the project site, as discussed earlier. Staff also discussed P3 with the Director of the

[2] This threshold is based on the Australian Government Civil Aviation Safety Authority's Advisory Circular 139-5(1), which provides 4.3 m/s or 10.6 m/s as plume vertical velocity thresholds to use for assessing impacts to aircraft (CASA 2012). Based on the fact that P3 may be in an area frequently overflown by Oxnard Airport air traffic, staff conservatively selected 4.3 m/s as the threshold to use. It is important to note the 4.3 m/s threshold is an average velocity including velocities at the edge of a plume and in the center. The velocity at the center of the plume is predicted to be twice the average velocity (8.3 m/s).

Ventura County Airport Land Use Commission (ALUC), Steve DeGeorge, and the Director of the Ventura County Department of Airports, Todd McNamee. Mr. DeGeorge had no comments on the project and referred staff to Mr. McNamee as the more appropriate person to consult regarding the project (CEC 2016w). Mr. McNamee stated that the plume was of concern, as the site could be overflown at altitudes considerably lower than 4,260 feet AGL by aircraft departing the Oxnard Airport. However, he was satisfied that the FAA had been notified of the CTG stack and with staff's proposed Conditions of Certification **TRANS-6** and **TRANS-7**. Mr. McNamee stated that the project owner had previously agreed to light the CTG stack, as required by staff in **TRANS-6**. Mr. McNamee also requested that the project include a condition granting an avigation easement to the county for the unobstructed use and passage of all types of aircraft in the airspace over the project (CEC 2016v). Staff does not think an avigation easement is necessary because **TRANS-7** only results in advising pilots to avoid overflight at altitudes lower than 4,260 feet AGL, and has no authority to prevent overflight.

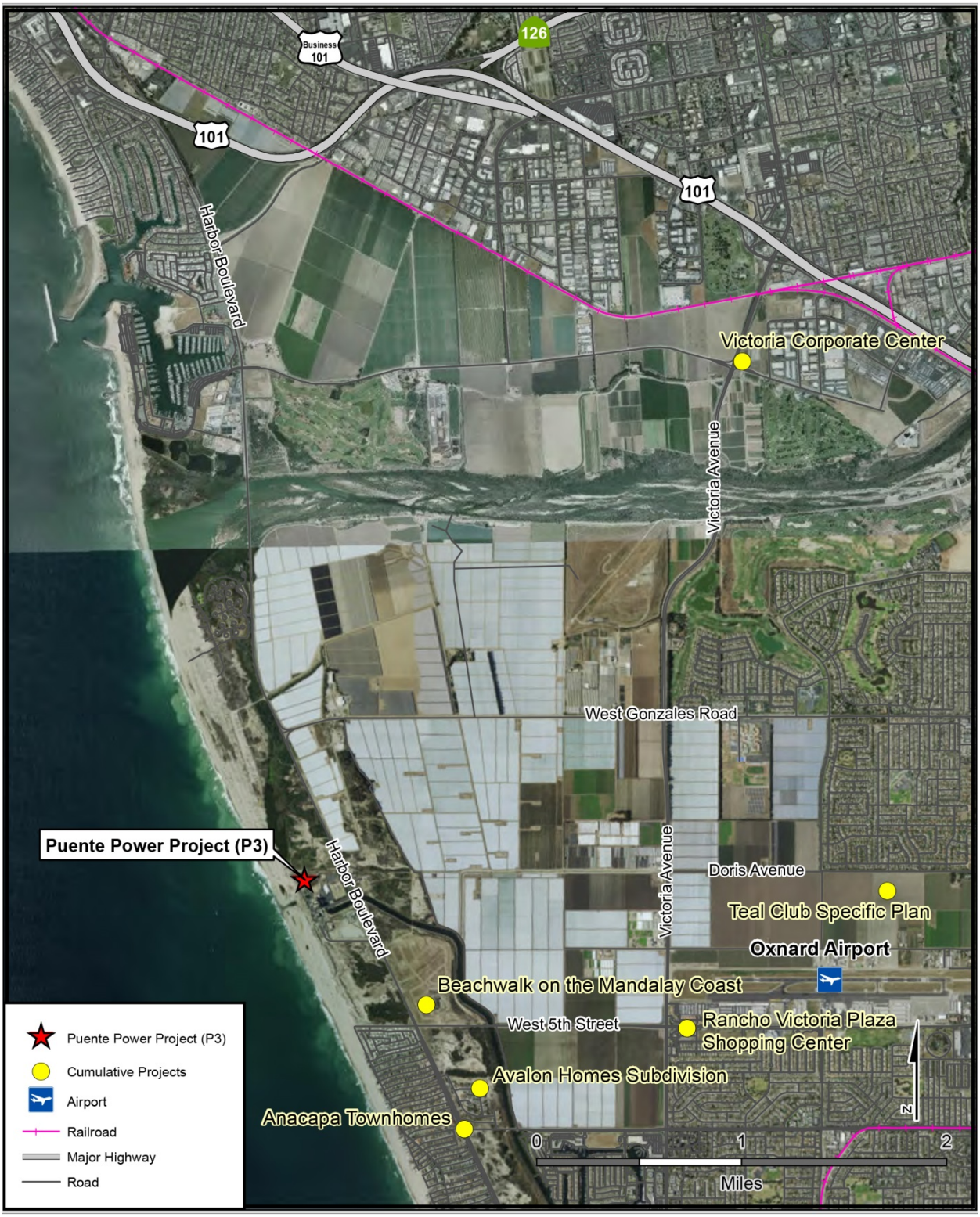
CUMULATIVE IMPACTS AND MITIGATION

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 past projects, current projects, and reasonably foreseeable future projects (Cal. Code Regs., tit. 14, § 15130).

Traffic Impacts

To evaluate cumulative impacts to traffic LOS, staff reviewed known past, current, and reasonably foreseeable future projects that could generate traffic on the P3 study roadways. Staff found that the main projects that could potentially cause cumulative impacts to traffic LOS, due to their location and size, when combined with the P3 project are: Anacapa Townhomes, Avalon Homes Subdivision, Beachwalk on the Mandalay Coast, Victoria Corporate Center, Rancho Victoria Plaza Shopping Center, and the Teal Club Specific Plan. The location of these projects with respect to P3 is presented in **Traffic and Transportation Figure 3 – Cumulative Projects**. **Traffic and Transportation Table 6** (below) provides information regarding these known projects.

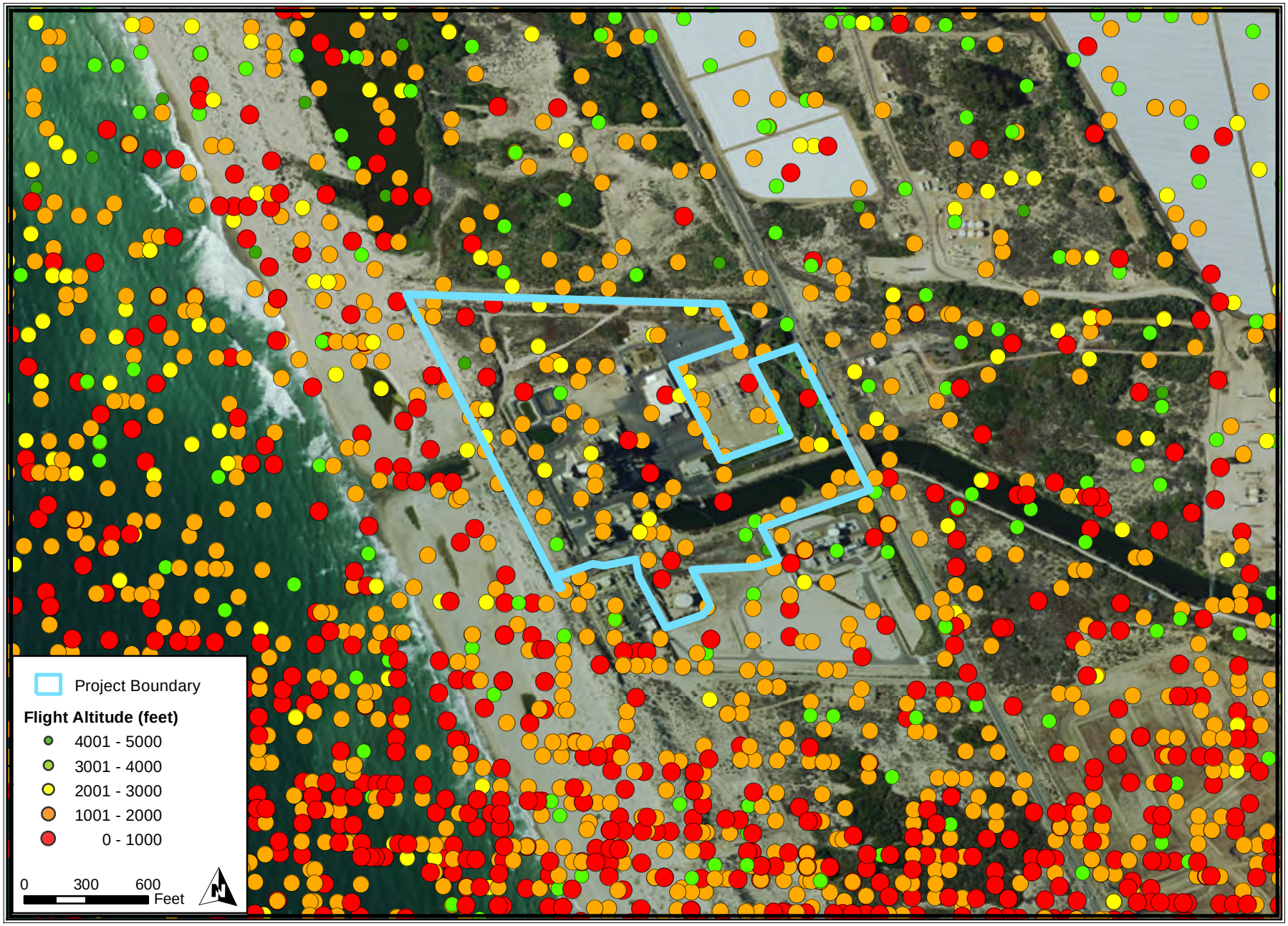
TRAFFIC AND TRANSPORTATION - FIGURE 3
Puente Power Project - Cumulative Projects



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: ESRI Imagery, California Department of Transportation Data

TRAFFIC AND TRANSPORTATION - FIGURE 4

Puente Power Project - Aircraft Flight Altitudes (October 1 - November 22, 2015)

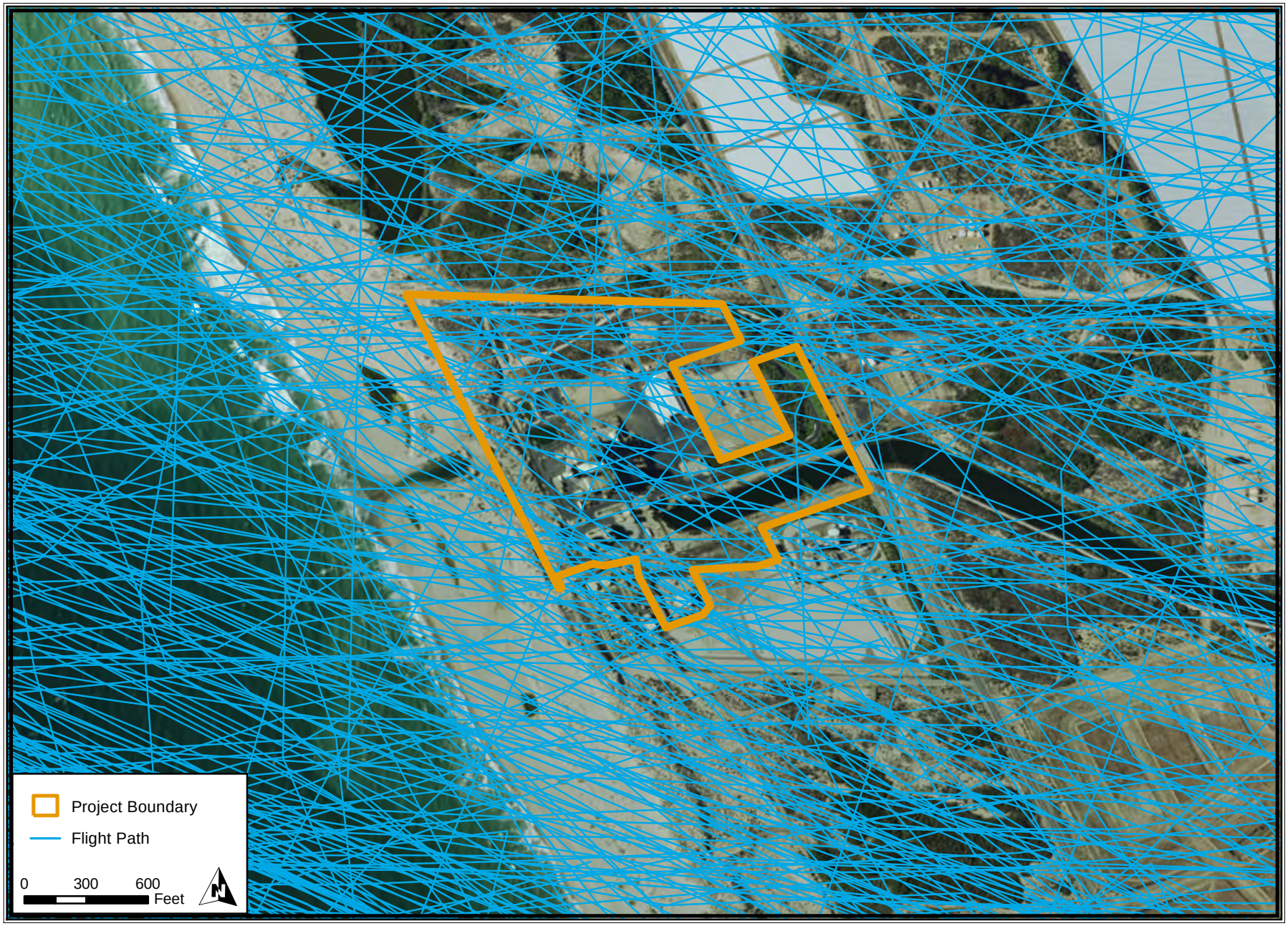


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: ESRI Imagery, Federal Aviation Administration Data

TRAFFIC AND TRANSPORTATION - FIGURE 5

Puente Power Project - Aircraft Flight Paths (October 1 - December 31, 2015)



TRAFFIC AND TRANSPORTATION

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: ESRI Imagery, Federal Aviation Administration Data

TRAFFIC AND TRANSPORTATION - FIGURE 5-1

Puente Power Project - Flight tracks that Passed within 3 Miles of Camarillo Airport (October 1 - December 31, 2015)



TRAFFIC AND TRANSPORTATION

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: ESRI Imagery, Federal Aviation Administration Data

Traffic and Transportation Table 6
Development Considered in the Cumulative Condition

Project	Location	Distance from Project Site	Potential P3 Study Roadways Affected	Status of Project
Anacapa Townhomes	5001 W. Wooley Road, Oxnard	1.45 miles to the south	Highway 101, Harbor Boulevard, Victoria Avenue, and West 5th Street	**Approved but on hold**. Coastal Development Permit (CDP) issued. No building or grading permits issued. Project owner is exploring selling the project (AT 2015, CEC 2015bb).
Avalon Homes Subdivision	On the bend of Catamaran Street, Oxnard	1.35 miles to the south	Highway 101, Harbor Boulevard, Victoria Avenue, and West 5th Street.	**Proposed.** Draft Environmental Impact Report (EIR) is being prepared. CDP to follow (CEC 2015ff).
Beachwalk on the Mandalay Coast (formerly North Shore Subdivision)	Northeast corner of West Fifth Street and Harbor Boulevard, Oxnard	0.85 miles to the south	Highway 101, Harbor Boulevard., Victoria Avenue, and West 5th Street	**Approved but will be resubmitted with design changes.** Project owner is revising plans to resubmit and is interested in selling the land to another developer (CEC 2015gg).
Victoria Corporate Center	Northeast corner of Victoria Avenue and Olivas Park Drive, Ventura	3.40 miles to the northeast	Highway 101 and Victoria Avenue	**Approved and for sale.** Seven one-story industrial office buildings to be constructed one building at a time (CV 2015, CEC 2015hh). The development is currently for sale (LF 2016).
Rancho Victoria Plaza Shopping Center	3600 and 3700 West Fifth Street, Oxnard	2 miles to the southeast	Highway 101 and Victoria Avenue	**Approved but proposed modifications to project under review.** Project owner has yet to submit Final Map and building permit application (CEC 2015gg).
Teal Club Specific Plan	Southeast corner of Doris Avenue and North	2.85 miles to the east	Highway 101, Victoria Avenue and West Gonzales Road	**Proposed.** The city is preparing the Final EIR for initial Planning Commission review in mid-2016 (CO 2016).

Project	Location	Distance from Project Site	Potential P3 Study Roadways Affected	Status of Project
	Patterson Road, Oxnard			

Each of these nearby projects has the potential to create cumulative traffic impacts when combined with P3. Staff conducted further analysis, as summarized below. The analysis only examines cumulative impacts during P3 peak construction and demolition of MGS Units 1 and 2, as this is when P3's greatest traffic impacts would occur. Trips above baseline would not be generated by P3 operation or decommissioning of MGS Units 1 and 2, as these activities would use existing MGS staff. Therefore, P3 would not contribute to cumulative traffic impacts during operation and decommissioning of MGS Units 1 and 2.

Anacapa Townhomes

A Coastal Development Permit (CDP) has been approved for the Anacapa Townhome Development (ATD), located approximately 1.45 miles to the south of the proposed P3 site at the northeast corner of the South Harbor Boulevard and Wooley Road intersection in the city of Oxnard. The project consists of the development of five buildings with 70 condominiums on a 3.5-acre site. Currently, the development is on hold, and no building or grading permits have been issued. The project owner is exploring options with other developers and hopes to sell the project (CEC 2015bb). An offering memorandum was released in April 2015 stating the objectives, risks, and terms of investment involved with the project (AT 2015). Construction of this project could potentially overlap with P3 peak construction or MGS demolition.

Avalon Homes Subdivision

The proposed Avalon Homes Subdivision (AHS) would be located in the city of Oxnard approximately 1.35 miles to the south of P3 and bordered by West 5th Street to the north, West Wooley Road to the south, and South Harbor Boulevard to the west. The AHS project would consist of 64 single-family homes on an eight-acre property. The project's Draft EIR is currently being prepared and will be released for public comment and review. The Final EIR and CDP application would then be reviewed by the Oxnard City Council. The construction start date is unknown (CEC 2015ff) but could potentially overlap with P3 peak construction or MGS demolition.

Beachwalk on the Mandalay Coast

The proposed Beachwalk on the Mandalay Coast (BMC) Development is located northeast of the intersection of West 5th Street and South Harbor Boulevard, approximately 0.85 mile to the south of the proposed P3. In 1999, the city of Oxnard approved an EIR for the project and the subsequent planning permits. The project proposes 292 new homes, public parks, preserved open space and trails, a pedestrian bridge over South Harbor Boulevard, and a boardwalk through Mandalay State Beach to the ocean.

The BMC development was issued updated planning permits in 2007, but the project owner has decided to modify the plans to resubmit. No building permits have been

issued to date. The project owner might be interested in selling the project to another developer (CEC 2015gg). The construction start date is unknown but could potentially overlap with P3 peak construction or MGS demolition.

Rancho Victoria Plaza Shopping Center

The Rancho Victoria Plaza Shopping Center (RVPSC) is located in the city of Oxnard at 600 Victoria Avenue, southeast of the intersection of South Victoria Avenue and West 5th Street. It is located approximately two miles southeast of the proposed P3 site. RVPSC is an approved, but not yet built, multi-tenant shopping center which has undergone multiple plan modifications over the last 23 years since it was approved in 1993. In April 2014, the project owner submitted an addendum to the Mitigated Negative Declaration to request approval of a revision to the Tentative Tract Map and a Special Use Permit to construct an office/retail center on a vacant 6-acre property located on the RVPSC site. The tentative tract map revision is for a reduction of 15 parcels to 11 parcels. The Special Use permit proposes to: reduce 14 structures to 11 structures; increase total floor space from 53,016 to 53,950 square feet; and revise onsite circulation and parking, the architectural design, the landscape plan, and the sign program (CO 2014). The proposed project modifications are still under review. The project owner to this date has not submitted the final map or building permit applications to the city of Oxnard. The construction start date is unknown (CEC 2015gg) but could potentially overlap with P3 peak construction or MGS demolition.

Teal Club Specific Plan

The Teal Club Specific Plan project (TCSP) is located approximately 2.85 miles east of the proposed P3 site, just south of Doris Avenue and east of Victoria Avenue. The project, a pedestrian-oriented village on 175 acres, would consist of a range of residential densities, an elementary school, public park, fire station and 60,000 square feet of retail, office and mixed-use space. The city is preparing the Final EIR for initial Planning Commission review in mid-2016 (CO 2016).

The TCSP is planned to be built in two phases: Phase 1, with completion by 2020, and Phase 2, with construction beginning in 2020 and ending in 2025. Phase 1 includes the construction of 770 residential units, a twelve-acre community park, a four-acre pocket park, four acres of mixed-use and retail commercial, and a fire station and YMCA facility. Phase 2 is the remainder of the project, which consists of 220 single- and multi-family residential units, eight acres of community parks, and a ten-acre business research park.

The TCSP's Draft EIR, which has been released for review, requires mitigation measures for improvements to the following three intersections: Victoria Avenue and Gonzales Road; Victoria Avenue and Doris Avenue; and Victoria Avenue and Teal Club Road. These improvements include: modifying a southbound right-turn lane to a third southbound "through" lane; the addition of a third northbound and third southbound lane; and the signalization of an intersection. All improvements are required to occur prior to any portion of Phase 1 development. During operation (occupancy), Phase 1 is estimated to generate approximately 722 AM peak hour trips and 954 PM peak hour trips, and a total of 9,973 ADT. Phase II is estimated to generate approximately 372 AM peak hour trips and 404 PM peak hour trips, and a total of 3,820 ADT (CO 2015).

No planning permits have been issued, so the construction start date is unknown. If Phase I is completed by 2020 as planned, Phase I construction, and potentially the proposed traffic improvements, would overlap with peak construction of P3. If Phase II is constructed between 2020 and 2025, Phase II construction would overlap with MGS demolition. MGS demolition would also overlap with occupancy of Phase I.

Victoria Corporate Center

The Victoria Corporate Center (VCC) is located 3.4 miles to the northeast of the proposed P3 site immediately to the south of Highway 101 at the northeast corner of Victoria Avenue and Olivas Park Drive in the city of Ventura. The project has approvals for the construction of seven industrial office buildings (CV 2015, CEC 2015hh). The development is currently for sale (LF 2016). The construction start date is unknown and could potentially overlap with P3 construction or MGS demolition.

Most of these projects have unknown construction start dates. All projects could involve construction that would overlap with P3 construction or MGS demolition activities, especially the TCSP, which has the most definitive construction start dates, and which would also generate sizable operation/occupancy traffic that would likely coincide with MGS demolition activities. Significant cumulative traffic impacts to LOS could result and the incremental impacts of the P3 would be cumulatively considerable, given the fact that Highway 101 east of Victoria Avenue currently operates at LOS F. To mitigate the P3's contribution to potentially significant cumulative impacts, staff proposes that **TRANS-2** include a requirement to stagger worker and truck traffic during peak hours for both peak P3 construction and MGS demolition, meaning that worker arrival trips would not occur simultaneously, and worker departure trips would not occur simultaneously. Implementation of **TRANS-2** would reduce the P3's contribution to significant cumulative traffic impacts to less than cumulatively considerable, especially given the fact that construction and demolition traffic would be temporary. Also, as agency approval of other projects is gained, staggering of project construction timing may occur to further reduce any potential cumulative traffic impacts.

Aviation Impacts

The proposed P3 includes a 188-foot-tall CTG stack, a height which required the applicant to notify the FAA under Section 77.9 of the Code of Federal Regulations. The FAA issued a Determination of No Hazard for the CTG stack. The only other tall structure in the area that could combine with the P3 to create a cumulative obstruction hazard impact for aircraft is the existing 200-foot-tall stack shared by MGS Units 1 and 2. However, the applicant would demolish this stack following construction of the P3. The P3's stack would be located approximately 1,440 feet (439 meters) from the 80-foot-high stack at the McGrath power plant, and approximately 879 feet (268 meters) from the four 54-foot-high stacks at MGS Unit 3. However, these stacks are relatively low and do not trigger FAA review of obstruction hazards. Therefore, the P3 stack would not combine with other tall structures to create cumulative obstruction hazard impacts to aircraft.

P3's plumes could possibly combine with other project plumes to create potentially significant cumulative impacts to aircraft. P3 would create high-velocity thermal plumes that would exceed 4.3 m/s, and could impact aviation safety, at altitudes up to 4,260

feet AGL, as discussed earlier in this section. MGS Unit 3, which will remain in operation, creates thermal plumes estimated to exceed this threshold at altitudes up to 3,700 AGL. SCE McGrath creates thermal plumes estimated to exceed this threshold at altitudes up to 838 AGL. (See **Appendix TT-1** of this section for more information.) Staff's proposed Condition of Certification **TRANS-7** would involve notification to pilots of the P3 plume, with an advisory to avoid overflight below 4,260 feet AGL, and **TRANS-6** would require marking and lighting of the P3's CTG stack to alert pilots of the location of the plume's source at night. These conditions of certification would mitigate the P3's incremental impacts, and would likely discourage pilots from flying over the entire area, including MGS Unit 3 and SCE McGrath. Pilots could avoid flying over P3, as flying over it is not required for exiting or entering the traffic pattern at the Oxnard Airport, and there is no VFR route above the project site. With mitigation, staff concludes that the P3's contribution to potentially significant cumulative impacts would be less than cumulatively considerable.

COMPLIANCE WITH LORS

With the proposed conditions of certification, P3 would comply with all traffic-related LORS. **Traffic and Transportation Table 7** provides a general description of the applicable LORS and a summary of project compliance.

TRAFFIC AND TRANSPORTATION Table 7
Project Compliance with Adopted Traffic and Transportation LORS

Applicable Law	Description	Consistency
Federal		
Code of Federal Regulations Title 49, Subtitle B: Sections 171-177 and 350-399	Requires proper handling and storage of hazardous materials during transportation.	Consistent. The applicant has stated that P3 would conform to this law by requiring shippers of hazardous materials to use the required markings on their transportation vehicles and to use properly licensed contractors and employees for hazardous materials transportation (PPP 2015a, p. 4.12-14). **TRANS-4** would verify the project owner's compliance with these regulations.
Code of Federal Regulations Title 14 Aeronautics and Space, Part 77 - Objects Affecting Navigable Airspace	Establishes standards for determining physical obstructions to navigable airspace; sets noticing and hearing requirements; provides for aeronautical studies to determine the effect of physical obstructions on the safe and efficient use of airspace; and oversees the development of antenna farm areas.	Consistent. On October 7, 2015, the FAA issued a "Determination of No Hazard to Air Navigation" for the stack, concluding that it would not be a hazard to air navigation. The Determination required that the applicant file an FAA Form 7460-2, Notice of Actual Construction or Alteration, within 5 days after the stack reaches its greatest height (FAA 2015). Staff has proposed Condition of Certification

Applicable Law	Description	Consistency
		TRANS-5 to verify that the applicant files this notice in compliance with FAA regulations. **TRANS-5** would also verify that the applicant files an FAA Form 7460-1, Notice of Proposed Construction or Alteration, with the FAA if any cranes or other construction equipment are used that would exceed a height of 188 feet, as required by the FAA's Determination of No Hazard issued for the P3's stack.
State		
California Vehicle Code: Div. 2, Chap. 2.5; Div. 6, Chap. 7; Div. 13, Chap. 5; Div. 14; Div. 14.1; Div. 14.3; Div. 14.7; Div. 14.8; & Div. 15	Includes regulations pertaining to: licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and the transportation of hazardous materials. Addresses the Commission of Highway Patrol's authority to issue licenses for the transportation of hazardous materials.	Consistent. The applicant has stated that the P3 would conform to the applicable provisions of the California Vehicle Code (PPP 2015a, pp. 4.2-14 – 4.2-16). Verification of compliance would be achieved by implementation of **TRANS-1** and **TRANS-4**. **TRANS-1** requires the project owner to demonstrate compliance with the applicable agencies' limits on vehicle sizes and weights, driver licensing, and truck routes, including evidence that the necessary permits for roadway use have been obtained. **TRANS-4** requires the project owner to comply with all regulations and to contract only with licensed hazardous materials delivery and waste hauler companies.
California Streets and Highway Code (S&HC): Div.1, Chap. 1, Article 3, Section 117; Div. 1, Chap. 3; Div. 2, Chap. 5.5 and 6	Includes regulations for the care and protection of State and County highways and provisions for the issuance of written permits. Requires permits for the location in the right-of-way (ROW) of any structures or fixtures necessary to telegraph, telephone, or electric power lines or of any ditches, pipes, drains, sewers, or underground structures.	Consistent. There is no offsite construction within roadways or rights-of-way.
California Health and Safety Code: Section 25160 et seq.	Pertains to operators of vehicles transporting hazardous materials; promotes safe transportation of hazardous materials.	Consistent**.** The applicant has stated in the AFC the project owner's intent to comply with these regulations. Condition of Certification **TRANS-4** would require the project owner to comply with applicable regulations and to contract with

Applicable Law	Description	Consistency
		licensed hazardous materials delivery and waste hauler companies.
State of California Department of Transportation (Caltrans), Caltrans Guide for the Preparation of Traffic Impact Studies	Caltrans' target LOS for state highway facilities is at the transition between LOS "C" and LOS "D". However, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the target LOS. If an existing state highway is operating at less than the appropriate target LOS, the existing measure of effectiveness should be maintained.	Consistent. Highway 101 west of Victoria Avenue currently operates at LOS D and would continue to operate at LOS D during peak construction and peak demolition. Highway 101 east of Victoria Avenue currently operates at LOS F and would continue to operate at LOS F during peak construction and MGS demolition. Although the freeway segments operate below Caltrans' target LOS, they would maintain their existing LOS during peak construction and MGS demolition and would therefore be consistent with Caltrans' LORS.
Local		
City of Ventura (CEC 2016a)	LOS E is acceptable at freeway interchange intersections, and LOS D is acceptable at the principal intersections within the city. Principal intersections are intersections that are regularly monitored by the city as a gauge of the operation of the city's circulation system. The city does not have an LOS standard for non-principal intersections, except for those that are located on the CMP network, at which the CMP level of service standard of LOS E is applicable.	Consistent. P3-generated traffic would not cause degradation of LOS below these standards.
County of Ventura General Plan, Transportation/Circulation Policies, Section 4.2.2	Policy 4.2.2-3: The minimum acceptable LOS for road segments and intersections within the Regional Road Network and Local Road Network shall be as follows: a) LOS D for all county thoroughfares and federal highways and state highways in the unincorporated area of the county… c) LOS C for all county-maintained local roads d) At any intersection between two roads, each of which has a prescribed minimum acceptable LOS, the lower LOS of the two shall be the minimum acceptable LOS for	Consistent. P3-generated traffic would not cause degradation of LOS below these standards.

Applicable Law	Description	Consistency
	that intersection.	
2009 Ventura County Transportation Commission, Congestion Management Program, Chapter 2.	Sets a minimum LOS of E for the CMP road network. The minimum standard of LOS E only applies to the CMP; local agency LOS minimum standards may be higher than the CMP minimum.	Consistent. P3-generated traffic would not cause degradation of LOS below these standards.
City of Oxnard 2030 General Plan, Infrastructure and Community Services Element	Policy ICS-2.6: Reduction of Construction Impacts Minimize and monitor traffic and parking issues associated with construction activities, require additional traffic lanes and/or other traffic improvements for ingress and egress for new developments for traffic and safety reasons, where appropriate.	Consistent. The applicant stated in the AFC that the project owner would implement a TCP which would address these issues. **TRANS-2** ensures implementation.
	Goal ICS-3: Maintain level of service "C" at designated intersections, unless otherwise reduced by city council direction. Policy ICS-3.1: CEQA Level of Service Threshold Requires level of service "C" as the threshold of significance for intersections during environmental review.	Consistent. P3-generated traffic would not degrade intersection LOS below these standards. Although the intersection of the MGS driveway and Harbor Boulevard currently operates below this standard, and would operate below this standard during P3 construction and operation and MGS demolition, delays would only affect traffic exiting the project site, not the general public. For this reason, staff does not consider the P3 as out of compliance with city of Oxnard LOS standards.
	Policy ICS-4.4: Truck Route Compliance Work with agencies and commercial businesses involved with goods movement to ensure that truck routes are adhered to by commercial vehicle drivers.	Consistent. The applicant stated in the AFC the project owner's intention to comply with local jurisdictions' truck routes. Condition of Certification **TRANS-1** would ensure compliance by requiring the project owner to comply with local jurisdictions' limitations on truck routes.
	Policy ICS-9.2: Development has Adequate Parking Review development proposals to encourage shared parking use and ensure adverse parking impacts are minimized or avoided.	Consistent. All construction, operation, and MGS decommissioning and demolition parking would occur on-site. **TRANS-2** ensures compliance by requiring the project owner to prepare a Parking/Staging Plan (PSP) for these phases as part of the TCP. The PSP must comply with the city of Oxnard's parking regulations.

Applicable Law	Description	Consistency
City of Oxnard 2030 General Plan, Safety and Hazards Element	Policy SH-7.2: Handling of Hazardous Materials Requires that hazardous materials are transported within the city in a safe manner and in compliance with local, state and federal standards.	Consistent. The applicant has stated in the AFC the project owner's intent to comply with these regulations. Condition of Certification **TRANS-4** requires the project owner to comply with applicable regulations and to contract with licensed hazardous materials delivery and waste hauler companies. See the **Hazardous Materials Management** section of this document for more information on hazardous materials.
Oxnard Codified Ordinances, CH 8, Sec. 8-3, 8-4,	Requires commercial vehicles over five tons, including load, to use designated truck routes. Any street not identified as a truck route is classified as a light traffic street.	Consistent. The applicant stated in the AFC the project owner's intention to comply with local jurisdictions' limitations on truck routes. Condition of Certification **TRANS-1** would ensure compliance by requiring the project owner to comply with these regulations.
Oxnard Municipal Code, Sec. 19-206	Requires an encroachment permit to conduct construction activities within city right-of-ways.	Consistent. There is no offsite construction within roadways or rights-of-way.
Oxnard Municipal Code, Sec. 19-241	Requires a special permit to operate or move an overweight vehicle on city streets or highways.	Consistent. The applicant has stated that the P3 would comply. Verification of compliance would be achieved by implementation of **TRANS-1**. **TRANS-1** requires the project owner to demonstrate compliance with the applicable agencies' limits on vehicle sizes and weights, driver licensing, and truck routes, including evidence that the necessary permits for roadway use have been obtained.

CONCLUSIONS AND RECOMMENDATIONS

Staff has analyzed the proposed P3's impacts to the nearby traffic and transportation system. As currently proposed, the construction and operation of P3 could result in significant impacts to the nearby traffic and transportation system. Construction traffic exiting left to travel northbound on Harbor Boulevard could potentially create accident hazards. Staff proposes Condition of Certification **TRANS-2** for implementation of a Traffic Control Plan (TCP) that requires signage along Harbor Boulevard warning drivers of construction traffic exiting the project site. The TCP would also be required to instruct heavy haul vehicles to exit the site by turning right onto southbound Harbor

Boulevard, unless a flagger is present to provide advance notice to approaching traffic of cross-traffic conflicts.

Another possible project impact would be from thermal plumes, which could pose hazards to aircraft. Under certain conditions, P3 would generate high-velocity thermal plumes exceeding 4.3 meters per second (m/s), the threshold velocity of concern for light aircraft, at altitudes up to 4,260 feet above ground level (AGL). Staff proposes Conditions of Certification **TRANS-6** and **TRANS-7** to mitigate potentially significant impacts to aviation. Condition of Certification **TRANS-6** would require obstruction marking and lighting of the CTG stack to alert pilots of the location of the plumes at night. Condition **TRANS-7** would require the project owner to work with the FAA and the Oxnard Airport Manager to notify all pilots using the Oxnard Airport and airspace above the P3 site of potential plume hazards.

With implementation of the proposed conditions of certification listed below (**TRANS-1** through **TRANS-7**), P3 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.

Socioeconomics Figure 1 shows the presence of an environmental justice (EJ) population based on race and ethnicity within a six-mile radius of the project site. **Socioeconomics Table 3** shows that the cities of Oxnard and Port Hueneme have below-poverty-level populations significant enough to be considered EJ populations. Staff's proposed mitigations would reduce traffic and transportation impacts to less than significant for all populations, including the environmental justice populations represented in **Socioeconomics Figure 1 and Table 3**. Please refer to the **Socioeconomics** section of this document for a full explanation of how staff determines the presence of EJ populations.

PROPOSED CONDITIONS OF CERTIFICATION

TRANS-1 Roadway Use Permits and Regulations

The project owner shall comply with limitations imposed by the Department of Transportation (Caltrans) and other relevant jurisdictions, including the city of Oxnard, the county of Ventura, and the city of Ventura, on vehicle sizes and weights, driver licensing, and truck routes.

Verification: In the Monthly Compliance Reports (MCRs), the project owner shall identify the permits received during that reporting period (copies of actual permits are not required in the MCR) to demonstrate project compliance with limitations of relevant jurisdictions for vehicle sizes, weights, driver licensing, and truck routes. The project owner shall retain copies of permits and supporting documentation on-site for Compliance Project Manager (CPM) inspection if requested.

TRANS-2 Traffic Control Plan, Heavy Haul Plan, and Parking/Staging Plan

Prior to the start of construction, the project owner shall prepare a Traffic Control Plan (TCP) for the project's construction and operation traffic and for Mandalay Generating Station (MGS) decommissioning and demolition 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 the Department of Transportation (Caltrans) District 7 office, the county of Ventura, the city of Oxnard, and the city of Ventura in the preparation and implementation of the TCP. The project owner shall submit the proposed TCP to these agencies in sufficient time for review and comment, and to the CPM for review and approval prior to the proposed start of construction and implementation of the plan.

The TCP shall include:

- Routes used for construction- and demolition-related trips for workers, deliveries, and heavy-haul trucks. The plan shall require that heavy haul vehicles exit the site by turning right onto southbound Harbor Boulevard, unless a flagger is present to direct traffic on Harbor Boulevard while the heavy haul vehicles turn left onto northbound Harbor Boulevard.
- Location and type of signage on Harbor Boulevard warning traffic to use caution and to be aware of construction and demolition vehicles exiting the power plant site
- Timing of construction- and demolition-related trips for workers, deliveries, and heavy-haul trucks, with trips scheduled for off-peak hours to the maximum extent possible, and staggered if occurring during the peak hours, meaning that arrival trips do not occur simultaneously, and departure times do not occur simultaneously
- Parking/Staging Plan (PSP) for project construction, MGS demolition, and project operation. The PSP must comply with the city of Oxnard's parking regulations by providing sufficient on-site parking for all workers and construction vehicles
- 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
- Means of access for emergency vehicles to the project site

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 TCP, for CPM review and approval.

TRANS-3 Restoration of All Public Roads, Easements, and Rights-of-Way

The project owner shall restore all public roads, easements, rights-of-way, and any other transportation infrastructure damaged due to project-related construction and demolition activities and traffic. Restoration shall be completed in a timely manner to the infrastructure's original condition. Restoration of significant damage which could cause hazards (such as potholes, deterioration of pavement edges, or damaged signage) shall take place immediately after the damage has occurred.

Prior to the start of site mobilization, the project owner shall notify the relevant agencies, including the city of Oxnard, county of Ventura, city of Ventura, and Caltrans District 7, of the proposed schedule for project construction and MGS demolition. The purpose of this notification is to request that these agencies consider postponement of any planned public right-of-way repairs or improvement activities in areas affected by project construction until construction is completed, and to coordinate any concurrent activities that cannot be postponed.

Verification: Prior to the start of site mobilization, the project owner shall videotape all public roads, easements, right-of-way segment(s), and intersections along the route construction and demolition vehicles would take in the vicinity of the project site. The project owner shall provide the videotapes or other recorded visual media to the CPM.

If damage to any public road, easement, or right-of-way occurs during construction or demolition, the project owner shall notify the CPM and the affected agency/agencies to identify the sections to be repaired. At that time, the project owner and CPM shall establish a schedule for completion and approval of the repairs with which the project owner must comply, unless approval for a schedule change is provided by the CPM. Following completion of any repairs, the project owner shall provide the CPM with letters signed by the affected agency/agencies stating their satisfaction with the repairs.

TRANS-4 Transportation of Hazardous Materials

The project owner shall contract with licensed hazardous materials delivery and waste hauler companies for the transportation of hazardous materials and wastes. The project owner shall ensure compliance with all applicable regulations and implementation of the proper procedures.

Verification: In the Monthly Compliance Reports (MCRs) during construction and demolition and the Annual Reports during operation, the owner shall provide the names of the contracted hazardous materials delivery and waste hauler companies used, as well as licensing verification. Licensing verification only needs to be included in the MCRs when a new company is used. If a company's licensing verification has already been submitted in an MCR, it is not necessary to submit it again. Licensing verification must be included in all Annual Reports, even if the company has already been used.

TRANS-5 Federal Aviation Administration Notification

The project owner shall submit the following filings to the Federal Aviation Administration (FAA):

- Form 7460-1, Notice of Proposed Construction or Alteration, regarding the use of any construction cranes exceeding 188 feet in height;

- Form 7460-2, Notice of Actual Construction or Alteration, for the CTG stack within 5 days after it reaches its greatest height.

The project owner shall comply with any conditions imposed by the FAA on the use of construction cranes exceeding 188 feet in height.

Verification: At least 60 days prior to ground disturbance, the project owner shall submit a copy of the FAA Determination of No Hazard to Navigable Airspace regarding the construction cranes to the CPM.

Within 10 days following the date the CTG stack reaches its greatest height, the project owner shall submit to the CPM a copy of the Form 7460-2 submitted to the FAA.

TRANS-6 Obstruction Marking and Lighting

The project owner shall install obstruction marking and lighting on the combustion turbine generator (CTG) stack. Lighting on the CTG stack shall be consistent with the standards set in FAA Advisory Circular 70/7460-1L, Obstruction Marking and Lighting.

Lighting shall be operational for the life of project operation. Upgrades to the required lighting configurations, types, location, or duration shall be implemented consistent with any changes to FAA obstruction marking and lighting standards.

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 the CTG stack that depict the required obstruction marking and lighting.

Prior to the start of plant operation, the project owner shall install and activate permanent obstruction marking and lighting consistent with FAA standards and shall inform the CPM in writing within 10 days of installation and activation.

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:

1. Submit a letter to the Federal Aviation Administration (FAA) requesting a Notice to Airmen (NOTAM) be issued advising pilots of the location of the power plant and recommending avoidance of overflight of the project site below 4,260 feet above ground level (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.

2. Submit a letter to the FAA requesting a power plant depiction symbol be placed at the power plant site location on the Los Angeles Sectional Chart with a notice to “avoid overflight below 4,260 feet AGL”.

3. Submit a request to the Oxnard Airport Manager to add new remarks to the Airport Traffic Information System (ATIS) and to the AFD. The remarks shall identify the location of the power plant and advise pilots

to avoid direct overflight below 4,260 feet AGL as they approach or depart the airport.

4. Submit aerodrome remarks describing the location of the power plant and advising against direct overflight below 4,260 feet AGL to the:
    a. FAA Airport/Facility Directory – Southwest U.S.
    b. Jeppesen (Airway Manual Services - Western U.S. Airport Directory)
    c. Pilots Guide to California Airports

Verification: Within 60 days following the start of construction, the project owner shall submit to the CPM for review and approval draft language for the letters of request to the FAA, the Oxnard Airport Manager, and the listed publications. The letters should request a response within 30 days that includes a timeline for implementing the required actions.

Within 60 days after CPM approval of the draft language, the project owner shall submit the required letters of request to the FAA, the Oxnard Airport Manager, and the identified publications. 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 FAA, Oxnard Airport Manager, or the listed publications do not respond within 30 days, the project owner shall contact the CPM.

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APPENDIX TT-1
PLUME VELOCITY ANALYSIS

Jacquelyn Record

INTRODUCTION

The following provides an assessment of the vertical thermal plume velocities for the Puente Power Project's (P3) General Electric (GE) 7HA.01 combustion turbine generator (CTG) exhaust stack. Staff also evaluated the thermal plume velocities from the existing Mandalay Generating Station (MGS) Unit simple-cycle 3 CTG, and the nearby Southern California Edison (SCE) McGrath simple-cycle CTG exhaust stacks. Staff completed calculations to determine the worst-case vertical plume velocities at different heights above the ground based on the applicant's proposed facility design and expected operations for P3 and applicant-recommended facility design and operating conditions for Unit 3 and McGrath. The purpose of this appendix is to provide documentation of the method used to estimate worst-case vertical plume velocities to assist evaluation of the project's impacts on aviation safety in the vicinity of the proposed facility.

PROJECT DESCRIPTION

The P3 is a proposed natural gas-fired, simple-cycle, air-cooled electrical generating facility that would have a single turbine with a nominal generating capacity of 262 megawatts (MW) and gross generating capacity of approximately 275 MW. The project would consist of one (1) natural gas-fired GE 7HA.01 CTG, and related ancillary equipment proposed to be located on the existing MGS site. There are small ancillary inlet air-coolers for this simple-cycle project which services lube oil cooling, gas compressor cooling, and generator cooling. This inlet air-cooling system has a very small heat rejection load in comparison to the existing and proposed gas turbines, and would not have thermal plumes of a magnitude to affect aircraft safety.

The applicant would continue to operate Unit 3, comprised of eight simple-cycle units generating approximately 130 MW, with exhaust from four rectangular co-located stacks. Due to the proximity to the P3 project site, the neighboring McGrath 49 MW simple-cycle turbine owned by SCE is also included in this analysis.

PLUME VELOCITY CALCULATION METHOD

SPILLANE APPROACH

Staff uses a calculation approach from a technical paper (Best 2003) to estimate the worst-case plume vertical velocities for the three facility stacks (P3, MGS Unit 3 and McGrath). The calculation approach, which is also known as the "Spillane Approach", is limited to calm wind conditions, which are the worst-case wind conditions for worst case plume rise and velocities. The Spillane Approach uses the following equations to determine vertical velocity for single stacks during these calm wind conditions (i.e. wind speed = 0):

(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 stack (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 the stack (and then added to stack height to obtain height above ground) that is above the momentum rise stage for single stacks (the height where z > 6.25D) and at the end of the plume merged stage for multiple plumes. The physical distances between the three different gas turbine exhaust stacks under consideration are great enough that the plumes are not expected to fully merge before the average vertical velocity becomes less than the 4.3 meters/second velocity of concern for aviation safety, as discussed further below. However, partial merging may occur under some metrological conditions. Additionally, it is assumed that the four separate MGS Unit 3 exhaust plumes would merge due to their proximity. These equations provide the plume diameter and plume-average velocity for the plume at various heights above ground; the peak plume velocity would be two times higher than the plume-average velocity predicted by these equations. The stack buoyancy flux (F_o) is a prominent part of Equation (1). The calm wind condition basis represents the worst-case conditions, and the vertical velocities will decrease substantially as wind speeds increase from calm conditions

For multiple stack plumes, where the stacks are equivalent, the multiple stack plume velocity during calm winds can be calculated in a simplified fashion. The approach is presented in the Best Paper as follows:

(5) $V_m = V_{sp}*N^{0.25}$

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

This simplified multiple stack plume velocity calculation method predicts somewhat lower velocity values than the full Spillane Approach methodology as given in data results presented in the Best paper (Best 2003).

MITRE EXHAUST PLUME ANALYZER

On September 24, 2015, the Federal Aviation Administration (FAA) released a guidance memorandum (FAA 2015) recommending that thermal plumes be evaluated for air traffic safety. FAA determined that the overall risk associated with thermal plumes in causing a disruption of flight is low. However, it determined that such plumes in the vicinity of airports may pose a unique hazard to aircraft in critical phases of flight (such as take-off and landing). In this memorandum a new computer model, different than the analysis technique used by staff and identified above as the Spillane Approach, is used to evaluate vertical plumes for hazards to light aircraft. It was prepared under FAA funding and available for use in evaluating exhaust plume impacts.

This new model, the MITRE Corporation's Exhaust Plume Analyzer (MITRE 2012), was identified by the FAA as a potentially effective tool to assess the impact that exhaust plumes may impose on flight operations in the vicinity of airports (FAA 2015). The Exhaust Plume Analyzer was developed to evaluate aviation risks from large thermal stacks, such as turbine exhaust stacks. The model provides output in the form of graphical risk probability isopleths ranging from 10^{-2} to 10^{-7} risk probabilities for both severe turbulence and upset for four different aircraft sizes. However, at this time the Exhaust Plume Analyzer model cannot be used to provide reasonable risk predictions on variable exhaust temperature thermal plume sources, such as cooling towers and air cooled condensers.

The FAA has not provided guidance on how to evaluate the risk probability isopleth output of the Exhaust Plume Analyzer model, but states in their memorandum that they intend to update their guidance on near-airport land use, including evaluation of thermal exhaust plumes, in fiscal year 2016. However, MITRE Corporation is suggesting that a probability of severe turbulence at an occurrence level of greater than 1×10^{-7} (they call this a Target Safety Level) should be considered potentially significant. This is equivalent to one occurrence of severe aircraft turbulence in 10 million flights. For the past 50 years, the MITRE Corporation has provided air traffic safety guidance to FAA, and their recommended Target Safety Level is based on this experience (MITRE 2015a).

Additionally, the MITRE model has a probability of occurrence plot limitation. While it provides output to predict plumes up to a maximum height of 3,500 feet above ground, the meteorological data that is used by the model is limited to a maximum height of 3,000 feet, so any higher altitudes simply reuse the 3,000 foot meteorological data. While it is possible to extend the vertical axis for the output plot, the MITRE Corporation has stated, "they cannot recommend doing so for this particular analysis [Puente]" (MITRE 2015b). The applicant's proposed use of a large frame CTG as a simple cycle is an unusual case, with high exit velocities and high exit temperatures; the MITRE model was not designed with this uncommon use of a large frame CTGs in a simple cycle configuration. The model was developed with the assumption that a plume would not rise higher than 3,000-3,500 feet above ground level, so the modeling output was

terminated at that height[3]. The effort to expand the data set and model to work properly at altitudes above 3,000 feet above ground level is such that the MITRE Corporation would need additional funding.

The MITRE Exhaust Plume Analyzer model uses site specific computer-generated, three dimensional meteorological data (atmospheric temperature and wind speed, varying with height above ground at the specific site location) combined with a series of aircraft conditions related to the determination of turbulence effects and upset to develop the modeling output. The data sources used to create the site specific meteorological data are from the National Oceanic and Atmospheric Administration's National Weather Service (NWS). These computer-generated data are averaged over 13-kilometer grid cells using a model covering the continental United States. The specific NWS measuring stations that provide this data were not identified in the model documentation. The model uses three years of the computer-generated site specific hourly meteorological data to perform these calculations (MITRE, 2012).

Staff conducted a preliminary evaluation using the MITRE model for the P3 plume, and results for the level of significance recommended by MITRE Corporation (1×10^{-7}) were well above 3,000 feet above ground, outside the recommended output range of the model; and above the 3,500 foot level provided as the highest extent in the model's graphical output files. At this time, staff does not believe the MITRE model should be used for final work products until the vertical axis is extended, the significance threshold is verified by the FAA and the model capabilities are enhanced to include other thermal plume sources such as cooling towers and air-cooled condensers.

SUMMARY

This appendix uses the Spillane Approach method to be consistent with staff assessments done for other projects and because the Spillane Approach is described in the FAA materials as providing similar risk assessments for light aircraft. Staff will consider using the new MITRE method to the extent that it is applicable after conducting further review of the FAA methodology and once FAA develops guidance on how to evaluate the output of the Exhaust Plume Analyzer.

[3] This recommendation seems to be based on MITRE's worst case exhaust assumptions that are similar to the exhaust conditions of a GE LM6000 gas turbine (like McGrath's gas turbine) operating in simple cycle mode, while there are many larger turbines operating in simple cycle mode, such as GE LMS100 gas turbines that have about twice the thermal exhaust output of a GE LM6000 gas turbine and the GE 7HA.01 gas turbine proposed for P3 that has about six times the thermal exhaust

EQUIPMENT DESIGN AND OPERATING PARAMETERS

GE 7HA.01 COMBUSTION GAS TURBINE DESIGN AND OPERATING PARAMETERS

The design and operating parameter data for the CTG stack exhaust are provided in **Plume Velocity Table 1**. Staff chose three scenarios from the applicant-provided modeling inputs from Application for Certification (AFC) Appendix C-5, Table C-5.2. Operating parameters chosen were for ambient temperatures of 38.9, 59, and 82.0 degree Fahrenheit (ºF) at maximum turbine loads to compute worst-case vertical plume velocities. Therefore the exhaust operating parameters shown correspond to full load operation for the corresponding ambient conditions.

Plume Velocity Table 1
P3 GE 7HA.01 CTG Exhaust Parameters

Parameter	**GE 7HA.01 CTG**			
Number of Stacks	1			
Stack Height	188 ft. (57.3 meters)			
Stack Diameter	22 ft. (6.71 meters)			
CTG Load (%)	100			
Ambient Temperature (°F)	38.9	59.0	82.0	
With Evaporative Cooling	No	No	Yes	No
Exhaust Temperature (°F)	900	900	900	900
Actual Cubic Feet per Minute (ACFM)	3,551,197	3,631,025	3,626,463	3,450,842
Exhaust Velocity	155.7 ft./s (47.46 m/s)	159.2 ft./s (48.52 m/s)	159.00 ft./s (48.46 m/s)	151.30 ft./s (46.12 m/s)
Exhaust Flow Rate (1000 lb./hr.)	6,181	6,322	6,314	6,008

Source: AFC Appendix C-5, Table C-5.2 (PPP 2015b)

MGS UNIT 3 DESIGN AND OPERATING PARAMETERS

The design and operating parameter data for the MGS project's Unit 3 is provided in **Plume Velocity Table 2** and was provided by the applicant, with the exception of the exhaust flow rate. Staff noticed some of the operating parameters for Unit 3 are internally inconsistent between the exhaust flow rate, the heat rejection, and the exhaust velocity which was submitted in DR Set 1 Table A-2-1 (PPP 2015c). Staff recalculated the exhaust flow rate to be consistent with the applicant-provided exhaust velocity and temperature, with the staff-calculated value now shown in the table with an asterisk symbol (*) in the operating parameters as shown in **Plume Velocity Tables 2 and 3**.

Alternatively, if the heat rejection is accurate then the exhaust velocity should be around 30 percent less. Because the staff-computed exhaust velocity is higher, staff decided to use this larger value to be conservative and used an exhaust flow rate of 2,598,000 lbs

per hour to correlate with an exhaust velocity of 49.98 (m/s) and temperature of 712 degrees Fahrenheit.

Plume Velocity Table 2
Unit 3 Operating and Exhaust Parameters

Parameter	MGS Unit 3
Number of Stacks	4
Stack Height	54 ft. (16.46 meters)
Stack Equivalent Diameter	12.9 ft. (3.93 meters)
Ambient Temperature (°F)	59
Ambient Relative Humidity (%)	60
Number of Stacks in Operation	4
Heat Rejection (MW/hr.)	102
Exhaust Temperature (°F)	712
Exhaust Velocity Per Stack	164 ft./s (49.98 m/s)
Exhaust Flow Rate (1000 lb./hr.)	2,598*

Source: DR Set 1 Table A-2-1 (PPP 2015c) and staff calculations.
*Value provided is staffs own calculation, and is different from what was provided in Applicants Data Responses to Set 1 (TN 205765) (PPP 2015c).

MCGRATH SIMPLE-CYCLE DESIGN AND OPERATING PARAMETERS

The design and operating parameter data for McGrath facility is provided in **Plume Velocity Table 3**. Because of the lack of available data specific to the McGrath simple-cycle gas turbine exhaust stack, the applicant recommends using operating parameters based on exhaust characteristics from a similar GE LM6000 gas turbine at the Almond 2 Power Plant Project.[4] Consistent with the staff computation for Unit 3, staff computed the exhaust flow rate to be consistent with the exhaust velocity and temperature.

Plume Velocity Table 3
McGrath Operating and Exhaust Parameters

Parameter	McGrath
Number of Stacks	1
Stack Height	80 ft. (24.4 meters)
Stack Diameter	12 ft. (3.66 meters)
Ambient Temperature (°F)	59
Ambient Relative Humidity (%)	60
Heat Rejection (MW/hr.)	63
Exhaust Temperature (°F)	850
Exhaust Velocity	99.0 ft./s (30.17 m/s)
Exhaust Flow Rate (1000 lb./hr.)	1,213*

Source: DR Set 1 Table A-2-2 (PPP 2015c) and staff calculations.
* Value provided is staffs own calculation, and is different from what was provided in Applicants Data Responses to Set 1 (TN 205765) (PPP 2015c).

[4] Almond 2 Power Plant Project, AFC, Tables 5.1A-3 and 5.1B-2b, May 2009.

PLUME VELOCITY CALCULATION RESULTS

Using the Spillane Approach, the plume average vertical velocities at different heights above ground were determined by staff for calm conditions for P3, Unit 3 and McGrath. Staff evaluated the potential for plume merging using the following stack-to-stack distances: (1) the distance between P3 and Unit 3 would be 268 meters, (2) the distance between P3 and McGrath would be 439 meters and (3) the distance between Unit 3 and McGrath is 174 meters. Plumes begin merging when the radius of each of the two plumes added together equals the distance between the stacks. As a rule of thumb they are considered fully merged when the sum of the plume radii adds to equal twice the distance between stacks.

As shown in **Plume Velocity Tables 1**, **2** and **3**, the three stacks and associated plumes under consideration in this analysis differ greatly from one another. Staff concludes that they are sufficiently different that the simplified merging process used for Equation 5 cannot be used. The vertical velocity associated with P3 is expected to be greater than Unit 3 and much greater than McGrath due to its higher heat release rate, and is expected to represent worst case plume velocity conditions.

Staff first evaluated the vertical plumes for each of the three facilities assuming they are located far enough apart that the plumes would not merge (although the four stacks of Unit 3 are assumed to merge with one another). The results are shown in **Plume Velocity Tables 4**, **5** and **6**. Then staff examined the likelihood of the plumes merging, even though they result in much different vertical plumes.

Staff calculated plume average vertical velocities for all four operating cases shown in **Plume Velocity Table 1** for the P3 stack and determined the worst-case predicted plume velocities occurred at 100 percent load without duct firing for the 38.9 ºF ambient temperature condition. Staff's calculated plume average velocity values are provided in **Plume Velocity Table 4**.

Staff calculated plume average vertical velocities for the operating cases shown in **Plume Velocity Table 2** for the four Unit 3 stacks and determined the worst-case predicted plume velocities occurred at a 59 ºF ambient temperature condition. Staff assumed all four stacks of Unit 3 combined to determine the value for Plume Equivalent Diameter and Velocity shown in the table. Staff's calculated plume average velocity values are provided in **Plume Velocity Table 5**.

Plume Velocity Table 4
P3 Worst-Case Predicted Plume Average Velocities (m/s)[a]

100 Percent Load at 38.9 °F Ambient Temperature		
Height Above Ground (ft.)[b]	**Plume Diameter (m)**	**Velocity (m/s)**
00	5.63	32.42
400	15.39	15.07
500	25.14	11.59
600	34.89	10.04
700	44.65	9.10
800	54.40	8.45
900	64.15	7.96
1000	73.91	7.57
1100	83.66	7.24
1200	93.42	6.97
1300	103.17	6.74
1400	112.92	6.53
1500	122.68	6.35
1600	132.43	6.19
1700	142.19	6.04
1800	151.94	5.91
1900	161.69	5.78
2000	171.45	5.67
3000	268.98	4.87
3100	278.74	4.82
3200	288.49	4.76
3300	298.25	4.71
3400	308.00	4.66
3500	317.75	4.61
3600	327.51	4.56
3700	337.26	4.52
3800	347.01	4.48
3900	356.77	4.43
4000	366.52	4.39
4100	376.27	4.36
4200	386.03	**4.32**
4300	395.78	4.28
4400	405.53	4.25

Source: Staff calculations.

Notes:

a. The Traffic and Transportation section of this document describes a plume average vertical velocity of 4.3 m/s to be the critical velocity of concern to light aircraft. 1 m/s is equal to 3.2808 ft/s, therefore 4.3 m/s is equal to 14.11 ft/s.

b. FAA regulations state that an aircraft may not be operated below an altitude of 1,000 feet above the highest obstacle when flying over congested areas. 1 foot is equal to 0.3048 meters, therefore, 1,000 feet is equal to 304.4 meters.

Plume Velocity Table 5
Unit 3 Worst-Case Predicted Plume Average Velocities (m/s)[a]

100 Percent Load at 59 °F Ambient Temperature		
Height Above Ground (ft.)[b]	**Plume Diameter (m)**	**Velocity (m/s)**
300	21.36	8.73
400	31.12	7.27
500	40.87	9.15
600	50.62	8.42
700	60.38	7.88
800	70.13	7.46
900	79.88	7.12
1000	89.64	6.84
1100	99.39	6.60
1200	109.15	6.39
1300	118.90	6.20
1400	128.65	6.04
1500	138.41	5.89
1600	148.16	5.76
1700	157.91	5.63
1800	167.67	5.52
1900	177.42	5.42
2000	187.18	5.32
3300	313.97	4.47
3400	323.73	4.43
3500	333.48	4.38
3600	343.23	4.34
3700	352.99	**4.30**

Source: Staff calculations.
Notes:

a. The Traffic and Transportation section of this document describes a plume average vertical velocity of 4.3 m/s to be the critical velocity of concern to light aircraft. 1 m/s is equal to 3.2808 ft/s, therefore 4.3 m/s is equal to 14.11 ft/s.
b. FAA regulations state that an aircraft may not be operated below an altitude of 1,000 feet above the highest obstacle when flying over congested areas. 1 foot is equal to 0.3048 meters, therefore, 1,000 feet is equal to 304.4 meters.

Staff calculated plume average vertical velocities for the operating cases shown in **Plume Velocity Table 3** for the McGrath stack and determined the worst-case predicted plume velocities occurred at a 59 ºF ambient temperature condition. Staff's calculated plume average velocity values are provided in **Plume Velocity Table 6**.

Plume Velocity Table 6
McGrath Worst-Case Predicted Plume Average Velocities (m/s)[a]

100 Percent Load at 59 °F Ambient Temperature		
Height Above Ground (ft)[b]	**Plume Diameter (m)**	**Velocity (m/s)**
300	18.75	6.92
400	28.50	5.91
500	38.25	5.32
600	48.01	4.91
700	57.76	4.61
800	67.52	**4.37**
900	77.27	4.18
1000	87.02	4.02
1100	96.78	3.87
1200	106.53	3.75
1300	116.28	3.64
1400	126.04	3.55
1500	135.79	3.46
1600	145.54	3.38
1700	155.30	3.31
1800	165.05	3.24
1900	174.81	3.18
2000	184.56	3.12

Source: Staff calculations.

Notes:

a. The Traffic and Transportation section of this document describes a plume average vertical velocity of 4.3 m/s to be the critical velocity of concern to light aircraft. 1 m/s is equal to 3.2808 ft/s, therefore 4.3 m/s is equal to 14.11 ft/s.

b. FAA regulations state that an aircraft may not be operated below an altitude of 1,000 feet above the highest obstacle when flying over congested areas. 1 foot is equal to 0.3048 meters, therefore, 1,000 feet is equal to 304.4 meters.

The velocity values listed above in **Plume Velocity Table 4**, **5** and **6** 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 tables.

As explained in the **Traffic and Transportation** section of this document, 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. FAA regulations state that an aircraft may not be operated below an altitude of 500 feet when flying over non-congested areas, or below 1,000 feet above the highest obstacle when flying over congested areas (14 C.F.R., § 91.119). As shown in **Plume Velocity Table 4**, **5** and **6**, the P3, Unit 3, and McGrath vertical velocities at 500 feet above ground are estimated to be 11.59, 9.15, and 5.32 meters per second (m/s), respectively; and at 1,000 feet above ground are estimated to be 7.57, 6.84 and 4.02 meters per second (m/s), respectively.

The P3 exhaust plume's average vertical velocity is calculated to drop below 4.3 m/s at a height of approximately 4,260 feet. The Unit 3 exhaust plume's average vertical velocity is calculated to drop below 4.3 m/s at a height of approximately 3,700 feet. The McGrath exhaust plume's average vertical velocity is calculated to drop below 4.3 m/s at a height of approximately 838 feet. Approximate heights where aviation safety is no longer a concern are shown in grey shading in the tables. As can be seen, the heights where the thermal plumes are considered no longer a hazard to light aircraft varies considerably from plume-to-plume. However, these results were obtained by assuming the plumes would not begin to merge before reaching these heights. Plume merging potential is discussed below.

MERGING OF SEPARATE PLUMES WITH DIFFERENT CHARACTERISTICS

When the sum of the radius of one plume and an adjacent plume equals the distance between the two adjacent stacks, the plumes would begin to merge and there would be less plume surface area to entrain ambient air into the plume. As a result, the vertical velocity would be expected to decrease more slowly than fully unmerged plumes and the height at which the vertical velocity would decrease below the critical plume-average vertical velocity would occur at a higher height than if the plumes did not merge.

In order to determine if a partially merging or fully merging plume would occur between the separate stack plumes evaluated in **Plume Velocity Tables 4**, **5** and **6**, staff needed to first determine how far apart the two other stacks are compared to P3's stack. The separation between the P3 stack and the four Unit 3 stacks would be approximately 268 meters and the separation between the P3 stack and the McGrath stack would be approximately 439 meters. The plumes would begin to merge when the sum of the plume radii equals the distance between the stacks. The plumes would be assumed to be fully merged when the sum of the plume radii equals twice the distance between stacks. Although worst-case ambient temperature conditions for P3 differ from Unit 3 and McGrath, for purposes of evaluating plume merging potential they are assumed to occur concurrently.

The P3 plume would begin to merge with the Unit 3 plume at around 2,800 feet above ground level and would not be fully merged until about 5,625 feet above ground level. Likewise, the P3 plume would begin to merge with McGrath at around 4,625 feet above ground level and would not be fully merged until about 9,250 feet above ground level. The likelihood of having calm wind conditions at these heights at a California coastal location, combined with operation of a simple-cycle peaking turbine, is very low. Also, for the most part the merging would occur at heights where the vertical plume velocity is below the 4.3 meters/second significance threshold. However, partial plume merging could somewhat increase the heights above ground where the vertical velocity reduces to below 4.3 meters/second.

WIND SPEED STATISTICS

Since the Spillane Approach used by staff is limited to calm wind conditions, the frequency of occurrence of calm wind conditions needs to be evaluated for the project site area. However, calm wind statistics data is not needed as input for the plume

modeling itself. The meteorological monitoring station closest to the proposed site is the Oxnard Airport monitoring station, which is approximately 2 miles east of the proposed P3. There are no substantial complex terrain features between the monitoring station and the proposed project site, therefore, meteorological data collected at the Oxnard Airport monitoring station are considered to be representative of the project site.

Wind speed data collected at a height of approximately 45 feet above ground are used to represent the region affected by the stack's plume from the ground level up to the height where there is no longer a concern for aircraft safety. For this project, that height exceeds 4,200 feet above ground level, which is over 90 times higher than the ground-based calm wind measurement.

Plume Velocity Table 7 provides the hourly average wind speed statistics for P3 from meteorological data collected from Oxnard Airport monitoring station. Wind roses and wind frequency distribution data was collected for 2009 through 2013. Calm winds for the purposes of the reported monitoring station statistics are those hours with average wind speeds below 0.5 m/s. The data shows that calm winds occurred 2.7 percent of the time and the average wind speed was 3.24 m/s. Wind speeds greater than or equal to 2.1 m/s occurred 32.7 percent of the time (PPP 2015a). Calm/low wind speeds conditions averaging an hour or longer appear to be infrequent in the site area.

Plume Velocity Table 7
Wind Speed Statistics for Oxnard Airport

Wind Speed Statistics	
Wind Speed	Percent
Calm	2.7%
≤ 2.1 m/s	32.7%
≤ 3.6 m/s	28.7%
≤ 5.7 m/s	23.4%
≤ 8.8 m/s	9.5%
≥ 8.8 m/s	2.5%

Source: Staff data reduction of Oxnard Airport monitoring site meteorological data from 2009-2013.

CONCLUSIONS

The calculated worst case calm wind condition vertical plume average velocities from P3 and Unit 3 are predicted to exceed 4.3 m/s at heights at or above 1,000 feet above ground level, while for McGrath they are estimated to be somewhat below 1,000 feet above ground level. Specifically, for P3's plume, this critical threshold is expected to be exceeded up to 4,260 feet above ground level and Unit 3's plume is expected to exceed the critical threshold up to 3,700 feet above ground level. Lastly, McGrath's plume is expected to exceed the critical threshold up to 838 feet above ground level.

The vertical velocities from the stack exhausts at given heights above ground decrease as wind speeds increase. The plume average vertical velocities for the P3 and Unit 3 would remain relatively high and would exceed 4.3 m/s above 1,000 feet above ground level during calm or very low wind speed conditions. These low wind speed conditions lasting an hour or more occur 2.7 percent of the time. Additionally, shorter periods of dead calm winds, lasting long enough to increase the vertical plume average velocities

to heights up to peak heights, can also occur during hours with low average wind speeds.

The likelihood of having completely calm wind conditions at these heights at a coastal California location, combined with the time when a simple-cycle turbine might be required to operate, is very low. Thus, the plume vertical velocities shown in **Plume Velocity Tables 4**, **5** and **6** are considered to represent a conservative analysis of potential aircraft safety risk. However, partially merged plumes could increase these heights somewhat. Unfortunately, the modeling tool used by staff cannot be used to evaluate merging of the three plumes that would be located at this site because the plumes are too diverse.

P3 is designed as a simple-cycle, peaking turbine facility. It is proposed to be limited to operate no more than 2,453 hours per year. Actual operation is likely to be considerably less, perhaps no more than 500 to 1,000 hours per year depending on electrical system load needs. The ambient conditions used in this analysis represents the average ambient temperature cases at peak turbine load, which is considered a reasonably conservative worst case for this peaking project that is expected to primarily operate during the summer. The reader should refer to the **Traffic and Transportation** section of this document for a discussion of impacts to aviation safety related to the vertical velocity results presented in this analysis.

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TRANSMISSION LINE SAFETY AND NUISANCE

Huei-An (Ann) Chu, Ph.D.

SUMMARY OF CONCLUSIONS

The applicant proposes to build one new single-circuit 220-kilovolt (kV) transmission line to connect the proposed Puente Power Project (P3) to Southern California Edison's (SCE's) switchyard adjacent to the existing Mandalay Generating Station (MGS) site. The proposed lines would lie entirely within the boundaries of the P3 and MGS sites and no offsite lines would be necessary. Since the proposed 220-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. MGS Units 1 and 2 would cease operations once P3 construction is complete; MGS Unit 3 would remain on-line. Since this is an existing power plant site and the connecting transmission line 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.. 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 Preliminary Staff Assessment (PSA) is to assess the transmission line design and operational plan for the proposed P3 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

The following table summarizes the LORS applicable to this facility. These LORS are fully evaluated in the remainder of this section.

Transmission Line Safety and Nuisance (TLSN) Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable LORS	Description
Aviation Safety	
Federal	
Title 14, Part 77 of the Code of Federal Regulations (CFR),"Objects Affecting the Navigable Air Space"	Describes the criteria used to determine the need for a Federal Aviation Administration (FAA) "Notice of Proposed Construction or Alteration" in cases of potential obstruction hazards.
FAA Advisory Circular No. 70/7460-1G, "Proposed Construction and/or Alteration of Objects that May Affect the Navigation Space"	Addresses the need to file the "Notice of Proposed Construction or Alteration" (Form 7640) with the FAA in cases of potential for an obstruction hazard.
FAA Advisory Circular 70/460-1G, "Obstruction Marking and Lighting"	Describes the FAA standards for marking and lighting objects that may pose a navigation hazard as established using the criteria in Title 14, Part 77 of the CFR.
Interference with Radio Frequency Communication	
Federal	
Title 47, CFR, section 15.2524, Federal Communications Commission (FCC)	Prohibits operation of devices that can interfere with radio-frequency communication.
State	
California Public Utilities Commission (CPUC) General Order 52 (GO-52)	Governs the construction and operation of power and communications lines to prevent or mitigate interference.
Hazardous and Nuisance Shocks	
State	
California Public Utilities Commission (CPUC) General Order 95 (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 (NESC)	Specifies grounding procedures to limit nuisance shocks. Also specifies minimum conductor ground clearances.
Industry Standards	

Applicable LORS	Description
Institute of Electrical and Electronics Engineers (IEEE) 1119, “IEEE Guide for Fence Safety Clearances in Electric-Supply Stations”	Specifies the guidelines for grounding-related practices within the right-of-way and substations.
Electric and Magnetic Fields	
State	
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 D.93-11-013	Specifies CPUC requirements for reducing power frequency electric and magnetic fields.
CPUC Decision D.06-01-042	Re-affirms CPUC EMF Policy in D.93-11-013.
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 at 393 North Harbor Boulevard in Oxnard, Ventura County, California, 93035. The proposed 262-megawatt (MW) (nominal net) P3 repowering project would replace a portion of the existing 430 MW Mandalay Generating Station (MGS). MGS Units 1 and 2 would be retired by the completion of commissioning of P3 and Unit 3 would continue to operate (PPP 2015a, Section 3.5).

PROJECT DESCRIPTION

The new P3 generating unit would connect to the existing SCE transmission switchyard by using one of the breaker positions that would be vacated when MGS Units 1 and 2 are removed from service (PPP 2015a, Section 2.1). One single-circuit 220-kilovolt (kV) transmission line would be required to connect P3 to the SCE switchyard to enable delivery of the project's electrical output to the transmission grid. The 220-kV single circuit would be designed and constructed in accordance with California Public Utilities Commission (CPUC) General Order (GO) 95, “Rules for Overhead Line Construction” and other applicable state and local codes (PPP 2015a, Section 3.0).

The 220-kV single circuit line for the project would be a direct intertie between P3 and SCE’s switchyard, which is adjacent to the MGS and P3 sites. The applicant provided a conceptual diagram showing the proposed interconnection (PPP 2015a, Figure 3-1). The transmission line interconnection would be approximately 735 feet in total length, from the P3 generator step-up (GSU) transformer on the combustion turbine generator (CTG) to the 220-kV tie-in-point at the switchyard. It would be located mostly within the P3 site, but would cross a small portion of the MGS site and then directly enter the SCE switchyard (PPP 2015a, Section 3.1).

The new 220-kV circuit line from the project switchyard to the SCE switchyard would use four steel pole structures, constructed of weathered or galvanized steel (PPP 2015a, Section 3.2.1).

Since P3 and the transmission interconnection would be located entirely within the P3 and MGS properties and the SCE switchyard, there are no receptors adjacent to the P3 site. Site access is restricted and would be limited to station workers, incidental construction and maintenance personnel, other company personnel, regulatory inspectors, and approved guests. Because access would not be available to the general public, general public exposure to EMF is not expected to occur from P3 or the transmission facilities to be constructed as part of the project (PPP 2015, Section 3.6.1).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

DIRECT IMPACTS AND MITIGATION

Aviation Safety

For P3, any potential hazard to area aircraft would relate to the potential for collision in the navigable airspace. The requirements in the LORS listed in **TLSN Table 1** establish the standards for assessing the potential for obstruction hazards within the navigable airspace. The requirements also establish the criteria for determining when to notify the FAA about such hazards. For example, FAA notification is required in cases of structures over 200 feet above ground level, 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 and heliports. Moreover, for airports with runways longer than 3,200 feet, the restricted space is defined by the FAA as an area space that extends 20,000 feet (3.3 nautical miles) from the runway. For airports with runways of 3,200 feet or less, the restricted airspace is defined as a space that extends 10,000 feet from the runway. For heliports, the restricted space is area space that extends 5,000 feet (0.8 nautical miles) from the landing site.

The proposed single-circuit 220-kilovolt (kV) transmission line connecting the proposed P3 to SCE's switchyard would be 100 feet in height (PPP 2015a, Figure 3-2), which is less than the 200-feet height of concern to FAA.

The closest airfield is the Oxnard Airport (OXR), which is approximately 1.8 miles (less than the 3.3 miles identified above) southeast of the project site (PPP2015a, Section 2.12.1.5). The length of its runway is 5,950 feet (more than the 3,200 feet also identified above) oriented in an east-west alignment. The airport is operated by Ventura County and is classified as a non-hub commercial service airport. In addition, two other airports operate in neighboring areas. Camarillo Airport is approximately 8 miles east of the P3 site, and Point Mugu Airport is approximately 10 miles southeast of the P3 site (PPP 2015a, Section 4.12.4.4). The closest airfield with regularly scheduled commercial flights is Santa Barbara Airport, approximately 44 miles away from P3 (PPP 2015a, Section 2.12.1.5).

The closet private heliport is Rotor-Aids Maintenance Hangar Heliport (CL73)[1], which is approximately 2.7 miles (more than 0.8 miles) southeast of the project site.

Staff has assessed the potential for an aviation hazard with regard to: (a) the height of the proposed project transmission line, and (b) distances and orientation from identified runways. Staff concludes that the transmission line would pose a potential collision hazard to area aviation or aircraft according to FAA criteria. Thus, regarding aviation safety, FAA notification would be required. According to the requirements in the LORS listed in **TLSN Table 1,** the applicant would need to file the "Notice of Proposed Construction or Alteration" (Form 7640) for an obstruction hazard.

Interference with Radio-Frequency Communication

Transmission line-related radio-frequency interference is one of the indirect effects of line operation. It is produced by the physical interactions of line electric fields. More specifically, such interference is due to 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. Corona from a transmission line may result in radio and television reception interference, audible noise, light, and production of ozone. 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 therefore would be minimized by reducing the line electric fields and by locating the line away from inhabited areas.

The P3 transmission 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 220-kV lines such as the proposed line of P3. Since the proposed P3's generation tie line is rated at less than 345 kV and would be located within an existing power plant and project's boundary with no nearby residents (PPP 2015a, Section 3.6.1), It is unlikely that the project transmission line would have any effect on radio or television reception due to the approximately 2,500-foot distance from the short transmission interconnection line to the nearest residence (PPP 2015a, Section 3.6.2). Therefore, staff does not expect any corona-related radio-frequency interference or complaints. Thus staff does not recommend any related condition of certification.

[1] http://www.airnav.com/airport/CL73

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. Instead, such audible noise is limited through design, construction, or maintenance practices established from industry research and experience as effective without significant impacts on line safety, efficiency, maintainability, and reliability. Audible noise usually results from the action of the electric field at the surface of the line conductor and could be perceived as a characteristic crackling, frying, or hissing sound or hum, especially in wet weather. Since the noise level depends on the strength of the line's electric field, the potential for perception would be assessed from estimating the field strengths during operation. Such noise is usually generated during rainfall, but mainly from overhead lines of 345 kV or higher. Audible noise is, therefore, not generally expected at significant levels from lines of less than 345 kV as proposed for P3. Research by the Electric Power Research Institute (EPRI 1982) has validated this by showing that the fair-weather audible noise from modern transmission lines is generally indistinguishable from background noise at the edge of a right-of-way of 100 feet or more. Since the proposed line right-of-way would fall entirely within the boundaries of an existing power plant and P3 (PPP 2015a, Section 3.6.1), 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 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 a 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. The applicant would comply with Title 14, CCR, Section 1250, Article 4, which establishes fire prevention standards for electric power generation facilities (PPP 2015a, Section 3.6.4). Also, GO-95 establishes rules and guidelines for transmission line construction (PPP 2015a, Section 3.8.2), including clearances from other manmade and natural structures, and tree-trimming requirements to mitigate fire hazards. Therefore, the applicant's intention to ensure compliance with the clearance-related aspects of GO-95 would be an important part of this mitigation approach. Although the new line would be located within the MGS or P3 property, 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. Hazard shocks 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.

Potentially hazardous shocks could result from electrical faults from the new P3 equipment or the SCE high-voltage transmission system. The existing SCE 220-kV switchyard is located within the secured area of the existing MGS. The SCE switchyard is fenced to keep individuals within the site from entering the switchyard where they could be exposed to associated hazardous shocks. The new P3 220-kV generation tie lines would be designed in accordance with applicable LORS. Implementing the GO-95-related measures against direct contact with the energized line would serve to minimize the risk of hazardous shocks. Because the line would be constructed in conformance with the requirements of CPUC GO-95 and Title 8 California Code of Regulations (CCR) 2700, hazardous shocks are highly unlikely to occur as a result of the project's construction and operation (PPP 2015a, Section 3.6.3). 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). The potential for nuisance shocks around the proposed line would be minimized through standard industry grounding practices.

For the proposed project line, the project owner would be responsible in all cases for ensuring compliance with these grounding-related practices within the right-of-way. Staff recommends Condition of Certification **TLSN-4** to ensure such grounding for P3.

Electric and Magnetic Field (EMF) Exposure

Both electric and magnetic fields are created whenever electricity flows, and exposure to them together is generally referred to as electric and magnetic field (EMF) exposure. There is general public concern regarding the possibility of health effects from EMF exposure.

The electrical transmission interconnection and other electrical devices that would be constructed as part of the project emit EMF when in operation. These fields are typically measured near ground level, where they are encountered by people. EMF fields, to the extent they occur, could impact receptors on the properties adjacent to the project site (PPP 2015a, Section 3.6.1).

As previously stated, the P3 electrical transmission interconnection and other electrical devices would be located entirely within the P3 and MGS properties and the SCE switchyard. There are no receptors adjacent to the P3 site. Site access is restricted and would be limited to station workers, incidental construction and maintenance personnel, other company personnel, regulatory inspectors, and approved guests. Because access would not be available to the general public, general public exposure to EMF is not expected to occur from P3 or the transmission facilities to be constructed as part of the project (PPP 2015a, Section 3.6.1).

Electric Fields

Electric fields around transmission lines are produced by differences in voltage (i.e., electrical charges on the energized conductor). The electric field strength is measured in volts per meter (V/m). Electric Fields are easily shielded/weakened by conducting objects such as trees and buildings. Increased voltage produces a stronger electric field, but increased distance from the sources decreases its strength.

Magnetic Fields

Magnetic fields around transmission lines are produced when electric current (measured in amperes) flows. Magnetic fields are measured in gauss (G) or tesla (T). Unlike electric fields, magnetic fields are not easily shielded/weakened by most materials. Magnetic field strength is directly proportional to the current; that is, increased amperes produce a stronger magnetic field. Like electric fields, increased distance from the sources decreases its strength.

The strengths of both the electric field and magnetic field are inversely proportional to the distance from the conductors. Thus, the EMF strength declines as the distance from the conductor increases.

Human Health Risk Assessment Findings

Human health risk assessments for EMF are conducted to determine if there are biological and other hazards from EMF exposure and what the potential health impacts might be.

Although there are several studies on the health effects of EMF, there are no consistent conclusions from human studies (epidemiological and clinical) and animal studies. In 1996, the World Health Organization (WHO) launched a large, multidisciplinary research effort (i.e. the International EMF Project) to bring together current knowledge and available resources including 25,000 articles which had been published over the past 30 years. Based on a recent in-depth review of the scientific literature, the WHO concluded that current evidence does not confirm the existence of any health consequences from exposure to low level electromagnetic fields[2]. The conclusions from WHO and other sources are summarized as follows:

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[2] EMF can be broadly divided into *static* and *low-frequency* electric and magnetic fields, where the common sources include power lines, household electrical appliances and computers, and *high-frequency* or radio frequency fields, for which the main sources are radar, radio and television broadcast facilities, mobile telephones and their base stations, induction heaters and anti-theft devices (WHO 2002).

- **Effects on general health:** Scientific evidence does not support a link between the reported symptoms (including headaches, anxiety, suicide and depression, nausea, fatigue and loss of libido) and exposure to electromagnetic fields.
- **Effects on pregnancy outcome:** The overall weight of evidence shows that exposure to fields at typical environmental levels does not increase the risk of any adverse outcome such as spontaneous abortions, malformations, low birth weight, and congenital diseases. There have been occasional reports of associations between health problems and presumed exposure to electromagnetic fields, such as reports of prematurity and low birth weight in children of workers in the electronics industry, but these have not been regarded by the scientific community as being necessarily caused by the field exposures.
- **Cataracts:** General eye irritation and cataracts have sometimes been reported in workers exposed to high levels of radiofrequency and microwave radiation, but animal studies do not support the idea that such forms of eye damage could be produced at levels that are not thermally hazardous[3]. There is no evidence that these effects occur at levels experienced by the general public.
- **Cancers:** Despite many studies, the evidence for any effect remains highly controversial. However, it is clear that if electromagnetic fields do have an effect on cancer, then any increase in risk will be extremely small. The results to date contain many inconsistencies, but no large increases in risk have been found for any cancer in children or adults. The U. S. National Institute of Environmental Health Sciences (NIEHS) also concluded that "a link has not been established between residential EMF exposure and adult cancers, including leukemia, brain cancer, and breast cancer. There have been no proven instances of cancer clusters[4] linked with EMF exposure, either (NIEHS 2002).
- **Childhood leukemia and cancers:** There have been studies showing a weak association between measured fields and childhood leukemia, but it is not clear whether this represents a cause-and-effect relationship. A number of epidemiological studies suggest small increases in risk of childhood leukemia with exposure to low frequency magnetic fields in the home. However, scientists have not generally concluded that these results indicate a cause-and-effect relationship between exposure to the fields and disease. Moreover, animal and laboratory studies have failed to demonstrate any reproducible effects that are consistent with the hypothesis that fields cause or promote cancer. After reviewing all the data, NIEHS also concluded in 1999 that the evidence was weak, but that it was still sufficient to warrant limited concern. Other than leukemia, the present available series of studies indicates no association between EMF exposure and childhood cancers (NIEHS 2002).

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[3] The definition of "thermally hazardous" is "any system above 130°F which exposes persons to potential thermal burns" (Source: http://apps.leg.wa.gov/wac/default.aspx?cite=296-59-080). Therefore, EMF is not at the level that is thermally hazardous.

[4] An unusually large number of cancers, miscarriages, or other adverse health effects that occur in one area or over one period of time is called a "cluster."

- **Electromagnetic hypersensitivity and depression:** Some individuals report hypersensitivity (examples: aches and pains, headaches, depression, lethargy, sleeping disorders, and even convulsions and epileptic seizures) to electric or magnetic fields. There is little scientific evidence to support the association between electromagnetic hypersensitivity and electromagnetic field exposure. Recent Scandinavian studies found that individuals do not show consistent reactions under properly controlled conditions of electromagnetic field exposure. Nor is there any accepted biological mechanism to explain hypersensitivity.

Based on the available evidence as evaluated by WHO and NIEHS, staff has determined that there is not sufficient evidence that such fields pose a significant health hazard to exposed humans.

EMF Exposure Guidelines and Policies

There are no health-based federal regulations or industry codes specifying environmental limits or maximum acceptable levels of EMF 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 California Public Utilities Commission (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 would likely be small;
- The most biologically significant types of exposures have not been established;
- Most health concerns are about the magnetic field; and
- There are measures that could be employed for field reduction, but they are not recommended because they would affect line safety, reliability, efficiency, and maintainability, depending on the type and extent of such measures.

State's Approach to Regulating EMF Exposures

In the absence of conclusive or evocative evidence, some states, including California, have chosen not to specify maximum acceptable levels of EMF exposure. Instead, these states, including California, mandate a program of prudent avoidance whereby EMF exposure to the public would be minimized by encouraging electric utilities that are regulated by the CPUC to use cost-effective techniques to reduce the levels of EMF. The municipal and other publicly owned utilities that are not under the direct jurisdiction of the CPUC voluntarily comply with this CPUC policy.

In 1993, the CPUC[5] issued Decision D. 93-11-013, establishing EMF policy for California's investor-owned electric utilities. The decision acknowledged that scientific research had not demonstrated that exposures to EMF cause health hazards and that it was inappropriate to set numeric standards that would limit exposure. In recognizing the scientific uncertainty, the CPUC addressed public concern over EMF by establishing a no-cost and low-cost EMF reduction policy that utilities would follow for proposed electrical facilities.

In 2006, the CPUC 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.06-01-042 did not point to a need for significant changes to existing field management policies. Instead, D.06-01-042 re-affirmed D.93-11-013 in that health hazards from exposures to EMF have not been established and that state and federal public health regulatory agencies have determined that setting numeric exposure limits is not appropriate at this time. The CPUC also re-affirmed its past conclusions and required the existing no-cost and low-cost precaution-based EMF policy to be continued. The CPUC requirement is that such field reductions are to be made only in connection with new or modified lines in any of the utilities' service areas. Each utility complies by establishing its own EMF-reducing measures and incorporating such measures into the designs for all new or upgraded power lines and related facilities. The CPUC further established specific limits on the resources to be used in each case for field reduction.

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 concerns noted above.. 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 would 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 transmission 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 could be used by staff and other regulatory agencies to assess the effectiveness of the applied reduction measures. These field strengths could be estimated for any given design using established procedures.

[5] CPUC regulates the installation and operation of many high-voltage lines owned and operated by investor-owned utilities

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 according to safety and 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 EMF Exposures

The present focus is on the magnetic field. This is because unlike electric fields, magnetic fields would penetrate the soil, buildings, and other materials to produce the types of human exposures at the root of health concerns.. 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 from high-voltage lines while using some common household appliances (National Institute of Environmental Health Sciences 1998). The difference between these types of field exposures is that the higher-level, appliance-related exposures are short term duration, while the exposures from power lines are lower level, but long term duration. Scientists have not established which of these exposure types 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 as previously noted, 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 MGS site and the proposed P3 project site. These field intensities would depend on the effectiveness of the applied field-reducing measures. 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 P3-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 P3 is SCE. Since the proposed project's 220-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 documented 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 has received no public or agency comments on the transmission line nuisance and safety aspects of the proposed P3 and would 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 non-field 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 P3 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 to 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.

CONCLUSIONS

P3 construction and operation, including the one new single-circuit 220-kilovolt (kV) transmission line to connect the proposed P3 to SCE's switchyard adjacent to the existing MGS site, is not expected to result in significant changes in EMF levels, corona, audible noise, or radio and television interference.

The proposed 220-kV transmission line would pose a potential line-related collision hazard to area aviation or aircraft. According to current FAA criteria, the applicant would need to file the "Notice of Proposed Construction or Alteration" (Form 7640) for an obstruction hazard. P3 would be located within the existing MGS property boundary and would tie into the existing SCE switchyard; therefore, staff concludes it is not feasible 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 GO-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 P3 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 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 line 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.

PROPOSED CONDITIONS OF CERTIFICATION

TLSN-1 The project owner shall construct the proposed 220-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 Southern California Edison'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 measure the maximum strengths of the line electric and magnetic fields at the edge of the right-of-way to validate the estimates the applicant has provided for these fields. These measurements shall be made (a) according to the standard procedures of the American National Standard Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) and (b) before and after energizing. The 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-energizing 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 GO-95 and section 1250 of Title 14 of the California Code of Regulations.

Verification: During the first five years of plant operation, the project owner shall provide a summary of inspection results and any fire prevention activities carried out along the 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.

REFERENCES

EPRI — Electric Power Research Institute 1982. Transmission Line Reference Book: 345 kV and Above.

National Institute of Environmental Health Sciences (NIEHS) 1998. *An Assessment of the Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields, Working Group Report*. < http://www.niehs.nih.gov/health/assets/docs_a_e/emf1.pdf >

National Institute of Environmental Health Sciences (NIEHS) 2002, *Electric and Magnetic Fields Associated with the Use of Electric Power*. <http://www.niehs.nih.gov/health/materials/electric_and_magnetic_fields_associated_with_the_use_of_electric_power_questions_and_answers_english_508.pdf#search=Electric%20and%20Magnetic%20Fields%20Associated%20with%20the%20Use%20of%20Electric%20Power >

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World Health Organization (WHO) 2002, *Establishing a Dialogue on Risks from Electromagnetic Field*s. < http://www.who.int/peh-emf/publications/EMF_Risk_ALL.pdf >

World Health Organization (WHO), *Electromagnetic fields (EMF)*, <http://www.who.int/peh-emf/about/WhatisEMF/en/index1.html>

VISUAL RESOURCES

Eric Knight

SUMMARY OF CONCLUSIONS

The proposed Puente Power Project (P3 or project) would not have a substantial adverse effect on visual resources, and would be in conformance with applicable laws, ordinances, regulations, and standards (LORS) pertaining to visual resources, with the effective implementation of the applicant's proposed mitigation measures and staff's proposed conditions of certification.

INTRODUCTION

The California Environmental Quality Act (CEQA) requires the California Energy Commission to determine the potential for significant impacts to visual resources resulting from the proposed project. Visual resources are the natural and cultural features of the environment that can be viewed. Visual resources also include "sensitive viewing areas," which are areas consisting of uses such as residential, recreational, travel routes, and tourist destinations, and the people within those use areas, or "sensitive viewers." This analysis focuses on whether the P3 would cause significant adverse visual impacts and whether the project would be in conformance with applicable LORS.

Visual Resources Appendix-1 (VR Appendix-1), Visual Resources Terms, Definitions, and Analysis Method, describes Energy Commission staff's methodology used in this analysis, and the "Method and Thresholds for Determining Significance" subsection below describes the thresholds for determining environmental consequences. In accordance with staff's procedure, conditions of certification are proposed as needed to reduce potentially significant impacts (under CEQA) to less than significant levels or to the extent possible, and to ensure LORS conformance, if feasible.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Visual Resources Table 1 lists the state and local LORS applicable to the P3. Further details on these LORS and the project's conformance with specific policies and ordinances are discussed in **Visual Resources Table 3** in the "Conformance with Laws, Ordinances, Regulations, and Standards" subsection, below. No federal LORS pertaining to visual resources are applicable to the proposed P3.

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

Applicable LORS	Description
State	
California Coastal Act of 1976 (Public Resources Code §30000 et seq.)	The California Coastal Act is the foundation of the California Coastal Management Program. The Act defines the state's coastal management goals and policies, establishes the boundaries of the state's coastal zone, and creates governmental mechanisms for carrying out the management program. The Coastal Act sets forth general policies that govern the California Coastal Commission's review of permit applications and local plans.
Local	
City of Oxnard Coastal Land Use Plan, February 1982	The Coastal Land Use Plan includes policies for resource management within the city of Oxnard's Coastal Zone Boundary.
City of Oxnard 2030 General Plan Goals and Policies	The Oxnard General Plan contains goals and policies that are intended to guide a wide range of public and private development decisions through 2030. The Goals and Policies document includes the seven state-required elements (land use, circulation, housing, open-space, conservation, safety, and noise), optional elements (sustainable community and military compatibility).
City of Oxnard Coastal Zoning Ordinance	The purpose of this article is to implement the policies of the California Coastal Act as identified in the Oxnard Coastal Land Use Plan.
City of Oxnard Zoning Code	This chapter establishes the minimum requirements for the promotion of the public health, safety, comfort, convenience, and general welfare for the city.

SETTING

REGIONAL DESCRIPTION

The proposed project site is on the coast of southern California, on the Oxnard Plain, a large coastal plain in southwestern Ventura County, California surrounded by the mountains of the Transverse ranges. The site is in the city of Oxnard, which is just south of the city of Ventura, west of the city of Camarillo, and north of Port Hueneme. Terrain along the Oxnard Plain is gently rolling to flat, varying in elevation from sea level to about 115 feet above sea level. The Pacific Ocean and the Los Padres and San Gabriel Mountains are visible from within the city of Oxnard (PPP 2015a).

PROJECT, SITE, AND VICINITY DESCRIPTION

The proposed P3 would occupy approximately 3 acres within the northern portion of the 36-acre Mandalay Generating Station (MGS) property located at 393 North Harbor Boulevard. The MGS property is bordered immediately to the west by Mandalay State Beach. To the north and south, the property is bordered by McGrath State Beach and Mandalay County Park. Immediately north of the project site is undeveloped open space

that surrounds McGrath Lake. The P3 site is bordered to the east by the Southern California Edison (SCE) Mandalay Switchyard. To the east of North Harbor Boulevard are open space and agricultural lands. The SCE-owned McGrath Peaker Plant is located immediately south of the MGS property. An undeveloped residential subdivision of 292 planned residences called “North Shore at Mandalay Bay” is just southeast of the MGS property. The nearest existing residential area is Oxnard Shores subdivision, located south of West Fifth Street about ¾ mile from the P3 site. **Visual Resources Figure 1** shows the existing view of the MGS from Mandalay State Beach, immediately west of the Oxnard Shores subdivision. **Visual Resources Figure 2** shows the view of MGS Units 1 and 2 from a point on Mandalay State Beach immediately west of the power plant property.

The proposed P3 would consist of a single combustion turbine with one, 188-foot tall exhaust stack, and associated facilities. If approved and following operation of the P3, existing MGS Units 1 and 2 and their 200-foot tall exhaust stack would be removed to grade. Unit 3, located immediately to the south of units 1 and 2, would remain. The P3 would interconnect with the adjacent SCE Mandalay Switchyard via a new 735-foot long overhead transmission line which would be supported by four, 100-foot tall steel pole structures. The line would be located entirely within the P3 and MGS sites and then directly enter the SCE switchyard.

The P3 would use a dry cooling system which uses air instead of water to cool superheated steam in the condenser. Therefore, there would be no visible water vapor plumes emitted from the cooling system. Visible plumes also would not be emitted from the combustion turbine exhaust stack since the exhaust temperature would be 900 degrees Fahrenheit and have low moisture content. The effect of visible plumes on visual quality is not discussed further.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

Staff uses the environmental checklist in Appendix G of the State CEQA Guidelines and professional practices for visual resource assessments to evaluate the potential effects of a project on visual resources. From the 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 which would adversely affect day or nighttime views in the area.

The CEQA Guidelines define a *significant effect on the environment* to mean “a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna,

ambient noise, and objects of historic or aesthetic significance"(Cal. Code Regs., tit.14 § 15382).

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 P3.

The process to evaluate potential impacts on visual resources from construction and operation of the P3 involved these general steps:

- Define the visual environment, or visual sphere of influence (VSOI), within which visual impacts could occur. Staff prepared a VSOI for this project.
- Describe sensitive viewpoints and the process to select key observation points (KOPs), 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.

VR Appendix-1 provides further detail on the approach and process used in this visual resources analysis.

Key Observation Points (KOPs)

The visual resources analysis involved identifying KOPs, or critical viewpoints, that would most clearly show the visual effects of the proposed project. A KOP may also represent primary viewer groups (e.g., recreationists) that could potentially be affected by the project. Results of the VSOI analysis, field visits, and a photographic survey for the P3 resulted in selection of five critical viewpoints to represent views from areas with relatively high levels of visual sensitivity. In consultation with Energy Commission staff, the applicant selected the following KOPs to represent viewing conditions for nearby residential, tourist, and recreational areas:

- KOP 1 – Mandalay State Beach, west of West 5th Street
- KOP 2 – Mandalay State Beach, west of Mandalay Beach County Park
- KOP 3 – McGrath State Beach, southwest of McGrath Lake
- KOP 4 – Rancho Victoria Plaza on Victoria Avenue
- KOP 5 – "North Shore at Mandalay Bay" on Harbor Boulevard

As required by the Energy Commission's Siting Regulations, the applicant took photographs of the project site to show existing conditions from the KOPs. The applicant then used the existing condition (baseline) photographs from the selected KOPs to prepare representative visual simulations of the proposed project. The simulations portray the relative scale and extent of the project. The photograph of the

existing condition and the visual simulation (proposed condition) were reviewed by staff for each KOP to determine the potential effects of the project on visual resources.

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 **VR Appendix-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*. **VR Appendix-1** includes definitions for the key terms used in this analysis.

Staff's assessment of visual impacts 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 significance for each KOP using **VR Appendix-1**, Table 5 – KOP Visual Impact Significance Determination.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Scenic Vistas

A significant effect on the environment would occur if a project would have a substantial adverse effect on a *scenic vista.* The term "scenic vista" is not defined in CEQA statute or guidelines. "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. Staff has not identified any scenic vistas that would be impacted by the proposed project. The P3 would have ***no impact*** under this criterion.

Scenic Resources

A significant effect on the environment would occur if a project would substantially damage *scenic resources*, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway. The city of Oxnard's beaches and coastline are recognized as the city's primary natural scenic resources, with two state beaches located within the city's planning area: McGrath State Beach and Mandalay Beach State Park.

Within McGrath State Beach is the 133-acre Santa Clara Estuary Natural Preserve, located approximately two miles north of the project site. The Natural Preserve is primarily within the Santa Clara River bed between the Pacific Ocean and North Harbor Boulevard Bridge. Recreation use is limited to passive activities (e.g., nature observation, hiking). The McGrath State Beach campground is closed to the public due to extensive flooding by the Santa Clara River and the resulting damage. A photograph of the view of the MGS from McGrath State Beach Campground is provided in **Visual Resources Figure 3**.

McGrath Lake is near the southern end of McGrath State Beach. It is an approximate 12-acre shallow coastal freshwater back dune lake. A variety of birds inhabit the area around the lake, which is located approximately 500 feet northwest of the P3 site.

Next to the MGS site is Mandalay State Beach, a sandy low-lying beach for public recreation day use, and Mandalay Beach County Park, a 94-acre undeveloped open space. The segment of beach and the park have no public facilities. Areas within the county park are fenced off to protect nesting areas for the California least tern and the western snowy plover, and to help the County of Ventura's active attempt to restore sensitive, fragile, and unique dune and wetland (**Visual Resources Figure 4** - View of Mandalay Beach County Park from Mandalay State Beach).

The city of Oxnard's Local Coastal Plan states: "The ocean is generally not visible from Harbor Boulevard, limiting the visual resources north of Fifth Street…Other visual resources in the coastal zone include the tall sand dunes south of Fifth Street and south of Wooley Road, the lower dunes in the Mandalay Beach County Park north of Fifth Street and the wetlands in the Ormond Beach area (Oxnard 1982, p. III-23)." Harbor Boulevard is to the east of the MGS site. Fifth Street is a little more than ½-mile to the south.

There are no scenic resources on the project site. The P3 would not eliminate or obstruct the public view of scenic resources in the area surrounding the project site. With the removal of MGS Units 1 and 2, the visual quality of the immediate area would be improved. The proposed project would have ***no impact*** under this criterion. The P3's visual impact on the visual character or quality of Oxnard beaches surrounding the proposed site is discussed below.

Visual Character or Quality

A significant effect on the environment would occur if a project would substantially degrade the existing visual character or quality of the site and its surroundings. The project's effect on visual character or quality is assessed from the five KOPs identified above. **Visual Resources Table 2**, Key Observation Point Evaluation Matrix and Visual Impact Determination Conclusions, summarizes the evaluations for each KOP's existing and proposed condition and the visual impact determination conclusion of the proposed project at each KOP.

KOP 1 – Mandalay State Beach, West of West 5th Street

KOP 1 is located on Mandalay State Beach, west of the intersection of West 5th Street and Mandalay Beach Road, approximately 0.75 mile south of the proposed P3 site. KOP 1 represents a public view from a segment of low-lying beach looking north toward the P3 site (see **Visual Resources Figure 6**). Features within the view include the beach, coastal foredunes, low shrubs and grasses, ice plant, an oil/gas production rig, the MGS, and the exhaust stack for the McGrath Peaker.

Existing visual quality is considered low to moderate, primarily as a result of the bulky MGS Units 1 and 2 and the 200-foot tall stack, which contrasts strongly with its coastal

Visual Resources Table 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]**						
1	Moderately Low	High	Moderate to High	Moderate	High	Moderate to High	Moderate to High	Moderate	Low to Moderate	Low	Low to Moderate	Less Than Significant
2	Moderately Low	High	High	Moderate	High	Moderate to High	Moderate to High	Moderate	Moderate	Low to Moderate	Low to Moderate	Less Than Significant
3	Moderately Low	High	High	Moderate	High	Moderate to High	Moderate to High	Moderate	Moderate to High	Moderate	Moderate	**Less Than Significant with Mitigation**
4	Moderately Low	High	Low to Moderate	High	Moderate	Moderate	Moderate	Low	Low	Low	Low	Less Than Significant
5	Moderately Low	Moderate	Moderate to High	High	Low	Moderate	Moderate	Low	Moderate	Low to Moderate	Low to Moderate	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 View ÷ 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)

setting. Given that this KOP is located on a public beach, and near the northern boundary of the Oxnard Shores subdivision, viewer concern is rated high. For context, **Visual Resources Figure 9** provides photographs of the Oxnard Shores residential subdivision as viewed from Mandalay State Beach south of KOP 1. Overall viewer exposure is rated moderate to high, which when combined with the ratings for visual quality and viewer concern, results in an overall visual sensitivity rating of *moderate to high* at KOP 1.

Visual Resources Figure 7 shows the existing view with a photo simulation of the project. From KOP 1, the P3's stack would be clearly visible. While difficult to detect, several of the project's transmission poles are also visible in the view. Although the P3's tall, cylindrical stack would contrast with the broad, horizontal landscape features, it would appear similar to the existing vertical elements at the site and in the vicinity. As seen from the area of KOP 1, the P3 would occupy a small portion of the view and would be subordinate to the existing power plant. From this vantage point, the P3 would appear to increase the mass of the MGS somewhat. Overall visual change is rated *low to moderate*, which in the context of moderate to high visual sensitivity at KOP 1, would be a ***less than significant effect*** on the environment.

Visual Resources Figure 8 shows a simulation of the project after demolition of MGS Units 1 and 2 in 2022. Without the massive boiler structures and stack (with its red and white painted top), visual quality is improved over baseline conditions.

KOP 2 – Mandalay State Beach, West of Mandalay Beach County Park

KOP 2 is located on Mandalay State Beach, west of Mandalay Beach County Park, approximately 0.50 mile south of the proposed P3 site. KOP 2 represents a public view from a segment of low-lying beach looking north toward the project site (see **Visual Resources Figure 10**). Features within the view include the beach, coastal foredunes, low shrubs and grasses, ice plant, the MGS, transmission poles and lines, and palm trees.

Visual quality is considered low to moderate, primarily as a result of the MGS, which contrasts strongly with its coastal setting. At this distance, the chaotic, complex nature of the existing facility is evident. Similar to KOP 1, viewer concern is rated high and viewer exposure is moderate to high. Overall visual sensitivity is *moderate to high* at KOP 2.

Visual Resources Figure 11 shows the existing view with a visual simulation of the project. Although the simple, geometric shapes of the P3 would contrast with the horizontal expanse of the beach, it would be similar in form to MGS Units 1 and 2. The P3 would occupy a small portion of the field of view at KOP 2, and would be subordinate to the substantially more massive MGS. Several of the project's transmission poles would be visible; however they are seen in the context of existing poles and vertical elements and would not draw attention. Overall visual change is rated *low to moderate*, which in the context of moderate to high visual sensitivity at KOP 2, would be a ***less than significant effect*** on the environment.

Visual Resources Figure 12 shows a simulation of the project after demolition of MGS Units 1 and 2 in 2022. Without the massive boiler structures and stack, visual quality is improved over baseline conditions. The P3 structures would be simpler and have a

more cohesive design than MGS Units 1 and 2. Existing levels of contrast and dominance would be substantially reduced.

KOP 3 – McGrath State Beach, Southwest of McGrath Lake

KOP 3 is located on McGrath State Beach, southwest of McGrath Lake, approximately 0.17 mile north of the proposed P3 site. KOP 3 represents a public view from a segment of beach looking south toward the project site (see **Visual Resources Figure 13**). Features in the view include coastal foredunes along with the more stable interior back dunes and dune swale, low shrubs and grasses, ice plant, MGS, transmission poles and lines, and the top of the McGrath Peaker exhaust stack. For context, **Visual Resources Figures 16 and 17** show views north of KOP 3, looking away from the proposed project site. **Visual Resources Figure 16** shows a segment of McGrath State Beach north of KOP 3 that includes a portion of sand beach, fenced dune restoration area, and oil pumping units (Rotaflex Long-Stroke Pumping Units) a half mile away; **Visual Resources Figure 17** shows the remainder of the fenced dune restoration area and McGrath Lake.

Like the other recreational viewpoints, visual quality is considered low to moderate and viewer concern is rated high. Overall visual sensitivity is *moderate to high* at KOP 3.

Visual Resources Figure 14 shows the existing view with a photo simulation of the project. At this close distance, the P3 would loom over this portion of McGrath State Beach, and would appear co-dominant with MGS Units 1 and 2. The vertical forms of the P3, although similar to the MGS, would contrast with the broad, horizontal form of the beach and dunes. View blockage of the sky backdrop is considered moderate. One of the project's transmission poles is visible at the left side of the simulation. The P3 transmission line would be seen in the context of existing switchyard structures. Overall visual change would be *moderate*. In the context of moderate to high visual sensitivity at KOP 3, the moderate level of visual change would be a ***significant effect*** on the environment. To minimize the P3's visual contrast, the applicant proposes use of "non-reflective elements where practical" and to use paint colors that would blend in with the existing visual conditions, stating in the AFC that "[t]he colors will provide subtle variations and contrast. The selected color will help the project to blend more naturally with the natural setting" (PPP 2015a, page 4.13-14). The new transmission line would use four 100-foot tall steel pole structures constructed of weathered or galvanized steel. Staff has incorporated the applicant's proposed mitigation measures into staff's proposed Condition of Certification **VIS-1**.

Visual Resources Figure 15 shows a photo simulation of the project after demolition of MGS Units 1 and 2 in 2022. Although power plant structures would be located closer to McGrath State Beach than they are presently, the overall quality of the view is improved by the removal of the massive, chaotic form of MGS Units 1 and 2. The P3 structures would be simpler and have a more cohesive design than MGS Units 1 and 2 and would be painted or treated to minimize color contrast with the setting. With the removal of units 1 and 2, existing levels of contrast and dominance would be substantially reduced, baseline conditions would be improved, and the project's visual impacts at KOP 3 would be ***less than significant***.

KOP 4 – Rancho Victoria Plaza on Victoria Avenue

KOP 4 is located on Victoria Avenue south of West 5th Street, near Rancho Victoria Plaza, a retail strip commercial center, and Sea View Estates, a residential subdivision. The KOP is approximately 2 miles southeast of the proposed P3 site. KOP 4 represents a public view from a segment of Victoria Avenue, an arterial road, looking northwest toward the project site (see **Visual Resources Figure 18**). Features within the view include a wind barrier (a length of fence with fabric attached), tilled farmland (farmland within the Oxnard-Ventura Greenbelt), transmission poles and lines; in the distance are dunes (Oxnard Dunes), trees, and the silhouette of MGS Units 1 and 2 and exhaust stack. For additional context, **Visual Resources Figure 21** shows a segment of Victoria Avenue north of KOP 4.

Existing visual quality is rated low to moderate. Victoria Avenue is a designated "scenic route" according to the Oxnard Local Coastal Plan interactive map; therefore viewer concern is rated high. According to the Traffic and Transportation section of the AFC, there are 43,810 average daily trips on Victoria Avenue. The posted speed limit is 55 MPH. Overall visual exposure is rated moderate as is overall visual sensitivity.

Visual Resources Figure 19 shows the existing view with a photo simulation of the project. The project would occupy a very small portion of the field of view from this distance, would be subordinate to the existing MGS, and would be similar in form to the MGS and other vertical elements in the view. Overall visual change is considered *low*. In the context of moderate visual sensitivity at KOP 4, the low degree of visual change would have a ***less than significant effect*** on the environment.

Visual Resources Figure 20 shows a photo simulation of the project after demolition of MGS Units 1 and 2 in 2022. Without the MGS, baseline conditions would improve.

KOP 5 – "North Shore at Mandalay Bay" on Harbor Boulevard

KOP 5 is located on Harbor Boulevard at the undeveloped main vehicle entrance to "North Shore at Mandalay Bay," a residential subdivision project that has been mothballed, approximately 0.7 mile southeast of the proposed P3 site. KOP 5 represents a public view from a segment of Harbor Boulevard, an arterial road, looking northwest toward the project site (see **Visual Resources Figure 22**). Features within the view include low shrubs and grasses, dune vegetation (area within Mandalay Beach County Park), MGS, McGrath Peaker, and transmission poles and lines.

Existing visual quality is rated low to moderate. Harbor Boulevard is a designated "scenic route" according to the Oxnard Local Coastal Plan interactive map; therefore viewer concern is rated high. According to the AFC, there are 17,090 average daily trips on Harbor Boulevard. Overall visual exposure is rated moderate as is overall visual sensitivity.

Visual Resources Figure 23 shows the existing view with a photo simulation of the project. The project would occupy a small portion of the field of view and would be similar in form to the MGS, McGrath Peaker, and other vertical elements in the view. Dominance is rated moderate. Two of the project's transmission poles would be visible from this KOP; however, they would be seen in the context of existing electrical infrastructure and would not draw attention. Overall visual change is considered *low to moderate*. In the context of moderate visual sensitivity at KOP 5, the low to moderate degree of visual change would have a ***less than significant effect*** on the environment.

Visual Resources Figure 24 shows a simulation of the project after demolition of MGS Units 1 and 2 in 2022. The P3 structures would be simpler and have a more cohesive design than MGS Units 1 and 2, appearing similar to the McGrath Peaker design. Existing levels of contrast and dominance would be substantially reduced and baseline conditions would be improved.

Light and Glare

A significant effect on the environment would occur if a project would create a new source of substantial light or glare that would adversely affect day or nighttime views in the area. If approved, construction of the project is estimated to take approximately 21 months and generally would occur between 7:00 a.m. and 6:00 p.m., Monday through Friday. On AFC page 4.13-11, the applicant states that any nighttime lighting that is required would be positioned to face downward and away from beach, residential, and agricultural uses, as is practicable for safety. Page 4.13-14 of the AFC states that operational lighting would be directed downward to avoid backscatter, and shielded from public view to the extent practicable. In addition, lighting not required continuously during nighttime hours would be controlled with sensors or switches operated so that lighting would be on only when needed. With the applicant's proposed mitigation measures, the project would not be a source of substantial light that would adversely affect nighttime views. Staff has incorporated these measures into proposed Conditions of Certification **VIS-2** and **VIS-3,** which address the design and use of lighting for construction/demolition and power plant operations, respectively.

In regard to daytime glare, page 4.13-14 of the AFC states that project structures and transmission pole structures would be treated to reduce sun reflectivity and potential glint/glare; the applicant proposes use of "non-reflective elements where practical." To minimize visual contrast, the applicant also proposes to use paint colors that would blend in with the existing visual conditions, stating that "[t]he colors will provide subtle variations and contrast. The selected color will help the project to blend more naturally with the natural setting." Staff has incorporated the applicant's proposed mitigation measures into staff's proposed Condition of Certification **VIS-1** to ensure project structures would not be a source of substantial glare nor contrast with their coastal setting that could adversely affect daytime views.

The proposed project would have a ***less than significant effect*** on the environment under this criterion.

CUMULATIVE IMPACTS AND MITIGATION

Under the CEQA Guidelines, cumulative impacts of the project must be discussed when the proposed project's incremental effect is "cumulatively considerable" (Cal. Code Regs., tit. 14, § 15130[a]). "'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, § 15065[a][3])

Staff prepared a Visual Sphere of Influence (VSOI). The VSOI delineates the terrain surface where the proposed project's tallest onsite structure may potentially be visible within a five-mile radius (excludes buildings, structures, trees, etc.). Using GIS, staff

drew a straight-line from a hypothetical observer standing two-meters (6.56 feet) at each of the seven existing and reasonably foreseeable future projects to the P3's 188-foot exhaust stack overlooking the terrain surface considering elevations and slope of the terrain. **Visual Resources Figure 25** shows the VSOI prepared for the cumulative analysis. It also shows the locations of existing and reasonably foreseeable future projects identified for the cumulative impact analysis within the five-mile radius.

Staff concludes that the 188-foot tall exhaust stack would not be visible from the seven identified projects. Therefore, the incremental visual effect of the proposed project, combined with the effects of the identified projects is not cumulatively considerable, and would have a less than significant effect.

CONFORMANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The Energy Commission's Siting Regulations address agency and staff responsibilities for review of compliance with applicable laws, ordinances, 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]).

Section 1744 of the 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]). 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 summary of applicable LORS in **Visual Resources Table 2** (below) provides staff's preliminary assessment of the P3 conformance with the LORS pertaining to protection of visual and aesthetic resources.

Visual Resources Table 2
Project Conformance With Applicable Visual Resources LORS

LORS	LORS Description	Conformance	Basis for Conformance with LORS
STATE			
California Coastal Act	**Policy 30251**. 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.	Yes	The MGS began operation in 1959. The P3 would be sited on a three-acre disturbed area of the 36-acre MGS site (see **Visual Resources Figure 27** – Aerial View of Simulation of Puente Power Plant). The P3 would have a simple, sleek design compared to the complex, chaotic character of MGS Units 1 and 2. AFC page 4.14-14 suggests a color treatment for the P3 to help it to blend more naturally with the natural setting. Staff has proposed Condition of Certification **VIS-1**, which would require application of surface treatment on exteriors of buildings, structures, and equipment to minimize contrast and glare. Complete removal of all above-grade components of units 1 and 2 would be completed by late 2022. The removal of the units would improve visual quality in this visually degraded area of the coastal zone (see **Visual Resources Figure 28**).
LOCAL			
City of Oxnard Coastal Land Use Plan, February 1982	**Policy 37**. All new development in the coastal zone shall be designed to minimize impacts on the visual resources of the area. Particular care should be taken in areas of special quality, such as those identified in the LCP. **Policy 38**. Height restrictions as defined by City Zoning Ordinance shall be used to avoid blocking views.	Yes	The MGS is within the designated "Coastal Zone" established in accordance with the California Coastal Act. The P3 would be built on a three-acre portion of the MGS property. The MGS and P3 site are within the city of Oxnard's EC, Coastal Energy Facilities Sub-Zone. The city of Oxnard's Local Coastal Plan states, "The ocean is generally not visible from Harbor Boulevard, limiting the visual resources north of Fifth Street...Other visual resources in the coastal zone include the tall sand dunes south of Fifth Street and south of Wooley Road, the

LORS	LORS Description	Conformance	Basis for Conformance with LORS
			lower dunes in the Mandalay Beach County Park north of Fifth Street and the wetlands in the Ormond Beach area." Harbor Boulevard fronts the MGS property to the east. Fifth Street is a little more than ½-mile to the south. The ocean and beach are not visible from Harbor Boulevard near the MGS as shown **Visual Resources Figure 29**). The P3 would have a 188-foot tall, 25-foot diameter exhaust stack. The new 220-kV transmission line would use four 100-foot tall steel pole structures constructed of weathered or galvanized steel. The exhaust stack and steel pole structures would block an inconspicuous amount of sky, if viewable, from the beach and Harbor Boulevard. The City of Oxnard Zoning Code section 16-303 BUILDING HEIGHTS (D) states; "Top structures and freestanding structures - Penthouses or roof structures for the housing of elevators, stairways, tanks, ventilating fans or similar equipment required to operate and maintain the building, and fire or parapet walls, skylights, towers, flagpoles, chimneys, smokestacks, or similar structures related to buildings and uses in commercial or industrial zones may be erected above the height limits prescribed in this code…"
City of Oxnard 2030 General Plan Goals and Policies	**Aesthetic, Scenic, and Landscape Resources** **Goal ER–6.** Protected and enhanced natural setting and scenic resources. **Policy ER - 6.1 Incorporate Views In New Development**. Preserve important public views and viewsheds by ensuring that the scale, bulk and setback of new development does not significantly impede or disrupt them and ensure that important vistas and view corridors are enhanced. Require development to provide physical	Yes	Above-grade removal of MGS Units 1 and 2 would be completed by late 2022. The removal of the units would improve visual quality in this degraded area of the coastal zone (see **Visual Resources Figure 28**). The removal of units 1 and 2 would provide a physical break between the P3 and other structures. The city of Oxnard's Local Coastal Plan states, "The ocean is generally not visible from Harbor Boulevard, limiting the

LORS	LORS Description	Conformance	Basis for Conformance with LORS
	breaks to allow views into these vistas and view corridors. **Policy ER- 6.2 Protect and Enhance Major Scenic Resources**. Protect and enhance the scenic resources of the beaches, Channel Island harbor, windrows, farmland, the Channel Islands, and surrounding mountains.		visual resources north of Fifth Street…Other visual resources in the coastal zone include the tall sand dunes south of Fifth Street and south of Wooley Road, the lower dunes in the Mandalay Beach County Park north of Fifth Street and the wetlands in the Ormond Beach area." Harbor Boulevard fronts the MGS property to the east. Fifth Street is a little more than ½-mile to the south. The ocean and beach are not visible from Harbor Boulevard near the MGS as shown in **Visual Resources Figure 29**).
	Policy ER - 6.4 Siting of Transmission Lines. Work with utility companies to avoid transmission lines interfering with scenic views.	Yes	The transmission line for the P3 would be located mostly within the P3 site, but would cross a small portion of the MGS site to enter the adjacent SCE Mandalay Switchyard. The single-circuit 220-kV overhead transmission line interconnection would be approximately 735 feet in total length. The new line would use four 100-foot tall steel pole structures constructed of weathered or galvanized steel. The city's LCP states, "The ocean is generally not visible from Harbor Boulevard, limiting the visual resources north of Fifth Street…" See proposed Condition of Certification **VIS-1** pertaining to application of surface treatment on exteriors of buildings, structures, and equipment.
	Policy ER - 6.5 Control of Lighting and Glare. Require that all outdoor light fixtures including street lighting, externally illuminated signs, advertising displays, and billboards use low-energy, shielded light fixtures which direct light downward and, where public safety would not be compromised, encourage the use of low-pressure sodium lighting for all outdoor light fixtures.	Yes	AFC page 4.13-14 states that lighting would be directed downward to avoid backscatter, and shielded from public view to the extent practicable. Lighting not required continuously during nighttime hours would be controlled with sensors or switches operated so that lighting would be on only when needed. Staff has proposed Condition of Certification **VIS-3** pertaining to permanent exterior lighting.
	Coastal Resources Goal ER-8. Protect coastal resources as a significant landscape feature to be experienced by residents and	Yes	The city's LCP states, "The ocean is generally not visible from Harbor Boulevard, limiting the visual resources north of Fifth

LORS	LORS Description	Conformance	Basis for Conformance with LORS
	visitors. **Policy ER- 8.1 Protect Shoreline**. Protect the shoreline and views to and along the Pacific Ocean, recognizing their value as natural and recreational resources.		Street…" Above-grade removal of MGS units 1 and 2 would be completed by late 2022.The removal of the units would improve visual quality in this visually degraded area of the coastal zone.
City of Oxnard Zoning Code	**SEC. 16-303. BUILDING HEIGHTS** (D) Top structures and freestanding structures - Penthouses or roof structures for the housing of elevators, stairways, tanks, ventilating fans or similar equipment required to operate and maintain the building, and fire or parapet walls, skylights, towers, flagpoles, chimneys, smokestacks, or similar structures related to buildings and uses in commercial or industrial zones may be erected above the height limits prescribed in this code, but no penthouse or roof structure, or any space above the height limit shall be allowed for the purpose of providing additional floor space.	Yes	The P3 exhaust stack would be 188 feet tall and 25 feet in diameter. A new 220-kV transmission line from the project switchyard to the adjacent SCE Mandalay switchyard would use four 100-foot tall steel pole structures. The P3 site is within the city of Oxnard's EC, Coastal Energy Facilities Sub-Zone. The EC Sub-Zone permits smokestacks and towers related to uses in commercial or industrial zones above the height limits prescribed in the Zoning Code.
	SEC. 16-320. ON-SITE LIGHTING Lighting within physical limits of the area required to be lighted shall not exceed seven footcandles, nor be less than one footcandle at any point. A light source shall not shine upon, or illuminate directly any surface other than the area required to be lighted. No lighting shall be of a type or in a location that constitutes a hazard to vehicular traffic, either on private property or on abutting streets. The height of light standards shall not exceed 26 feet. To prevent damage from automobiles, standards shall be mounted on reinforced concrete pedestals or otherwise protected.	Yes	See proposed Condition of Certification **VIS-3**.
City of Oxnard Coastal Zoning Ordinance	**SEC. 17-20. EC, COASTAL ENERGY FACILITIES, SUB-ZONE** (A) Purpose - The purpose of the EC sub-zone is to provide areas that allow for siting, construction, modification, and maintenance of power generating	Yes	The MGS and the proposed P3 are within the city of Oxnard's EC, Coastal Energy Facilities Sub-Zone. Visual resources standards applicable to the P3 are discussed below under Article III,

LORS	LORS Description	Conformance	Basis for Conformance with LORS
	facilities and electrical substations consistent with Policies 51, 52, 54, 55 and 56 of the Oxnard Coastal Land Use Plan. Additionally, the EC sub-zone is designed to provide a framework for coordinating the requirements and responsibilities of applicable city, state, and federal regulatory agencies vested with the authority for reviewing energy facility development and to assure consistency with the Oxnard Coastal Land Use Plan. (C) Applicable provisions - All uses shall be subject to the applicable standards of this chapter, including standards contained in the following sections: (1) Section 17-5, General requirements; (2) Article III, Specific Coastal Development and Resources Standards; (3) Article IV, General Coastal Development and Resource Standards; and (4) Article V, Administration.		Specific Coastal Development and Resources Standards, and Article IV, General Coastal Development and Resources Standards.
	Article III. Specific Coastal Development and Resources Standards		
	SEC. 17-33. VISUAL RESOURCES (A) Purpose - The purpose of this section is to provide standards to ensure that the scenic and visual qualities of Oxnard's Coastal Zone are considered and protected as a resource of public importance, in a manner consistent with the standards contained in this section and other general and specific coastal development and resource standards contained in this chapter, as well as all applicable provisions and policies and the Oxnard coastal land use plan. (B) Applicability and specific standards - All new development in Oxnard's Coastal Zone shall be designed to protect views to and along the ocean and scenic coastal areas. Specific standards are contained in Policy Nos. 37	Yes	See basis for conformance with the Oxnard Coastal Land Use Plan, above.

LORS	LORS Description	Conformance	Basis for Conformance with LORS
	and 38 of the Oxnard Coastal Land Use Plan as well as those contained in the Channel Islands Harbor Resubmittal.		
	Article IV. General Coastal Development and Resources Standards		
	SEC. 17-47. LANDSCAPING STANDARDS (A) Purpose - The purpose of this section is to provide standards designed to enhance the appearance of development within the city by requiring the placement and maintenance of landscaping for aesthetic and screening purposes, and to provide for areas of improved open space consistent with the Oxnard coastal land use plan, with special concern for the coastal zone. (B) Applicability and specific standards - The landscaping standards shall apply where landscaping is required by this chapter as part of a project or permit condition of approval and to all areas where landscaping is proposed by the applicant. All landscaping shall be installed and maintained in accordance with chapter 16 of the code.	Yes	The applicant is not proposing to install new landscaping on the P3 site. The effectiveness of landscaping the P3 site in order to screen or partially screen the project from the southern portion of McGrath State Beach would be negligible - see **Visual Resources Figure 13**.
	SEC. 17-51. GENERAL STANDARDS (A) Purpose - The purpose of this section is to provide general standards relating to fencing, building heights, zone walls, on-site lighting, architectural features and similar provisions which generally apply to all development within the coastal zone. (B) Applicability and specific standards - Except as otherwise provided in this chapter, the general standards of chapter 16 shall apply to development in the coastal zone.	Yes	Response to building height, see SEC. 16-303 BUILDING HEIGHTS above. Response to on-site lighting, see SEC. 16-320 ON-SITE LIGHTING above. The proposed P3 Operation Security Plan includes a requirement for a permanent full perimeter fence or wall, at least eight (8) feet tall. If a wall is selected, Visual Resources staff recommends that it be designed in an aesthetically pleasing way. Refer to the **Hazardous Materials Management** section of the staff assessment for discussion.

NOTEWORTHY PUBLIC BENEFITS

The proposed P3 would result in beneficial visual impacts due to the removal of the existing MGS Units 1 and 2 in 2022. Baseline viewing conditions from public beaches and other vantage points would be improved.

CONCLUSIONS

Staff evaluated if the proposed project would have a significant effect on the environment according to Appendix G of the State CEQA Guidelines and if the project would be in conformance with applicable LORS. Staff concludes the following:

- The proposed project would not have a substantial adverse effect on a scenic vista.
- The proposed project would not substantially damage a scenic resource.
- The proposed project would not substantially degrade the existing visual character or quality of the site and its surroundings at KOPs 1, 2, 4, and 5. At KOP 3, visual character or quality of the existing site and surroundings would be degraded – a potentially significant effect on the environment. The applicant has proposed mitigation measures, incorporated into staff's proposed Condition of Certification VIS-1, to treat project structures in colors that would help to blend the project into its coastal setting and to use non-reflective materials to the extent feasible. In addition, in November 2015, the applicant revised the project description to include above-grade removal of MGS units 1 and 2 in 2022. With the removal of units 1 and 2, existing levels of contrast and dominance would be substantially reduced, baseline conditions would be improved, and impacts at KOP 3 would be less than significant.
- The proposed project would not create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.
- The proposed project's incremental visual effect is not cumulatively considerable.
- Proposed mitigation measures (conditions of certification) would reduce visual impacts to less than significant for all populations, including environmental justice populations represented in Socioeconomics Figure 1 and Table 3 (see the Socioeconomics section of this staff assessment).
- The project as currently proposed would be in conformance with applicable state and local LORS pertaining to visual resources with the effective implementation of the applicant's proposed mitigation measures and staff's proposed conditions of certification.

PROPOSED CONDITIONS OF CERTIFICATION

Staff has drafted conditions of certification for the project for consideration by the Energy Commission.

Surface Treatment of Project Structures and Buildings

VIS-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.

A. The Surface Treatment Plan shall be submitted to the Compliance Project Manager (CPM) and the Planning Director of the city of Oxnard, for simultaneous review and comment. Any comments on the plan from the city shall be provided to the CPM. Modifications to the Surface Treatment Plan are prohibited without the CPM's approval. The Surface Treatment Plan shall provide the following:

1. A discussion of all considered surface treatments and the rationale for choosing the proposed surface treatment colors and finishes;

2. An assessment of each considered surface treatment's effectiveness in avoiding or minimizing impacts to visual resources, ensuring compatibility between the energy facility site and its surroundings, and enhancing design and visual quality of the site and its surroundings;

3. Three printed sets (11" x 17"), and a digital copy in PDF format of elevation drawings depicting at life-size scale the major project structures and buildings, and specifying for each structure and building: (1) the proposed color and finish; and (2) the height, length, and width or diameter;

4. Two sets of color brochures, color chips, and or physical samples showing each proposed color and finish. Digital 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;

5. Three printed sets (11' x 17") and a digital copy in PDF format of color visual simulations at life-size scale showing the surface treatment proposed for the project structures. The visual simulations for key observation point (KOP) 2 and KOP 3 shall be used to prepare images showing the proposed surface treatment plan;
6. A detailed schedule for completing the surface treatments;

7. A procedure to ensure proper surface treatment maintenance for the life of the project.

B. The monopoles for the on-site 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.

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 and the Planning Director of the city of Oxnard for simultaneous review and comment. The project owner shall provide the CPM with a copy of the transmittal letters submitted to the city requesting their review of the Surface Treatment Plan. The CPM shall deem the Surface Treatment Plan acceptable to the city if comments are not provided to the CPM within 45 calendar days of receipt of said 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 Planning Director. 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 the project, 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:

1. The condition of the surfaces and finishes of all structures at the power plant site,

2. All major maintenance activities that occurred during the reporting year, and

3. A schedule for major maintenance activities for the next year.

Site Lighting – Project Demolition, Construction, and Commissioning

VIS-2 Consistent with applicable worker safety regulations, the project owner shall ensure that lighting of on-site demolition and construction areas and construction worker parking lots minimizes potential night lighting impacts by implementing the following measures:

A. 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).

B. 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.

C. Task-specific lighting shall be used to the maximum extent practicable.

D. Wherever and whenever feasible, lighting shall be kept off when not in use and motion sensors shall be installed and used to the maximum extent practicable.

E. The Compliance Project Manager (CPM) shall be notified of any demolition- and 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.

Verification: Within seven calendar days after the first use of construction and demolition lighting, the project owner shall notify the CPM that the lighting is ready for inspection. 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.

Lighting Management Plan – Project Operation

VIS-3 The project owner shall prepare and implement a comprehensive Lighting Management Plan. The comprehensive Lighting Management Plan shall be submitted to the CPM, and the Planning Director of the city of Oxnard for simultaneous review and comment. Any comments on the plan from the city 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.

Consistent with applicable worker safety regulations, the project owner shall design, install, and maintain all permanent exterior lighting such that light sources are not directly visible from areas beyond the project site, 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 facility. The project owner shall meet these requirements for permanent project lighting:

1. The Lighting Management Plan shall include three printed sets of fullsize plans (24” x 36”, minimum), three sets of 11” x 17” reductions,

2. a digital copy in PDF format, and contain the following information.

3. 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.

4. 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.

5. Exterior lighting shall be designed to minimize backscatter to the night sky to the maximum extent feasible.

6. 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.

7. Lighting fixtures shall be kept in good working order and continuously maintained according to the original design standards.

8. The Lighting Management Plan shall be consistent with all applicable laws, ordinances, regulations, and 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.

Verification: At least 90 calendar days before ordering any permanent lighting equipment for the project, the project owner shall submit the comprehensive Lighting Management Plan to the CPM and the Planning Director of the city of Oxnard for simultaneous review and comment. The project owner shall provide the CPM with a copy of the transmittal letters submitted to the city requesting their review of the Lighting Management Plan. The CPM shall deem the Lighting Management Plan acceptable to the city of Oxnard if comments are not provided to the CPM within 45 calendar days of receipt of said 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 Planning Director of the city of Oxnard. 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 the project, the project owner shall notify the CPM that installation of permanent lighting for the project 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.

REFERENCES

California Department of Parks and Recreation, “McGrath State Beach,” n.d., http://www.parks.ca.gov/?page_id=607.

City of Oxnard Coastal Land Use Plan, February 1982 as amended.

City of Oxnard Local Coastal Plan interactive map <maps.ci.oxnard.ca.us/planning/localcoastalplan.html>.

City of Oxnard Zoning Code section 16-303 BUILDING HEIGHTS (D).

PPP 2015a – NRG Energy Center Oxnard LLC/John Chillemi (TN 204219-1 – 204220-14). Application for Certification, dated April 13, 2015. Submitted to Robert Oglesby/CEC/Docket Unit on April 16, 2015.

PPP 2015x – Latham & Watkins LLP Project Enhancement and Refinement, Demolition of Mandalay Generating Station Units 1 and 2 (TN 206698). Submitted on November 19, 2015. CEC/Docket Unit on November 19, 2015.

VISUAL RESOURCES APPENDIX-1

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 stack. 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 five 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 three to five 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 one 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

Criteria	Rating
The element contrast demands attention, will not be overlooked, and is dominant in the landscape.	High (strong)
	Moderate to High
The element contrast begins to attract attention and begins to dominate the characteristic landscape.	Moderate
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).

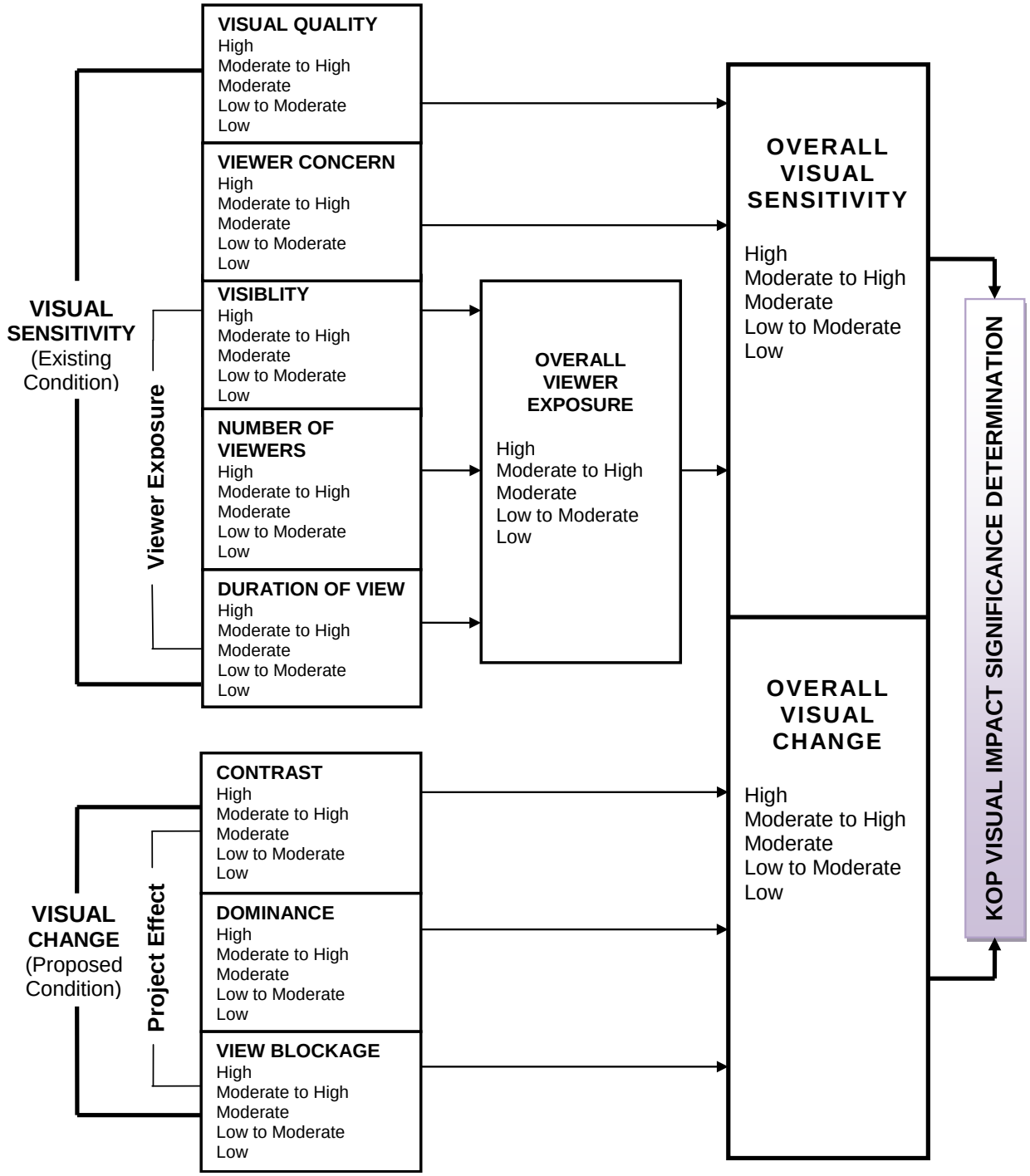
View Blockage

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:

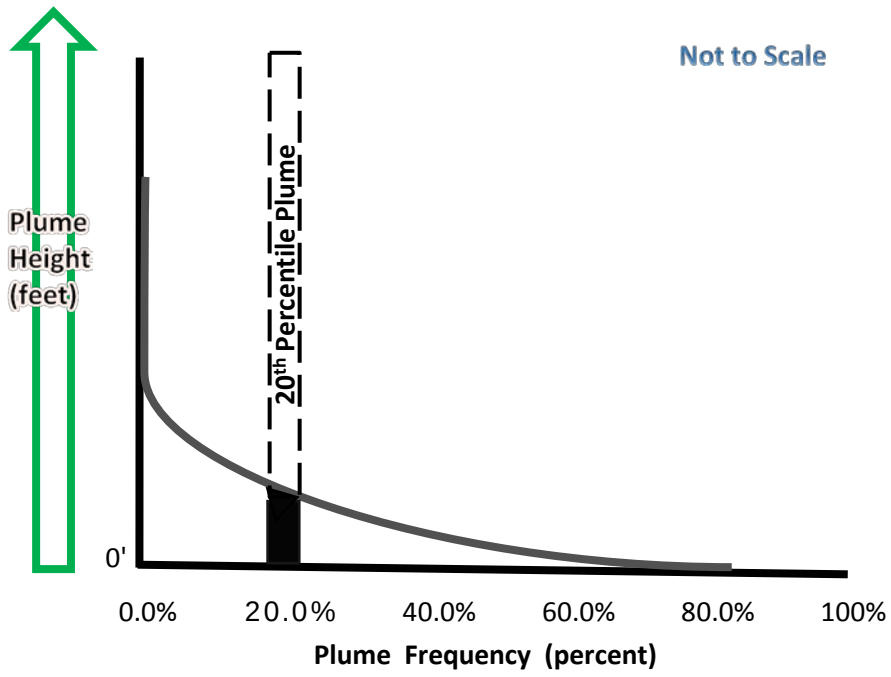
a) Visible plumes typically contrast most with sky under clear conditions, and when total sky cover is equal to or less than 10 percent, clouds either do not exist or they make up such a small proportion of the sky that conditions appear to be virtually clear.

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 six-month portion of the year when the ambient conditions are such that visible water vapor plumes are most likely to occur. This maximum six-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 one 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 ATTACHMENT-1

Facility Name: Puente Power Project	Complaint Log No:
Complainant's name and address:	Phone No:
Date and time complaint received: Complaint filed: ☐ By Telephone ☐ In Writing (attach letter) ☐ In Person Date of first occurrence:	
Description of the complaint (lighting, duration, etc.):	
Findings of investigation by NRG 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

Puente Power Project - View from Mandalay State Beach West of Oxnard Shores subdivision of the Mandalay Generating Station



VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Staff photo dated April 20, 2016

VISUAL RESOURCES - FIGURE 2

Puente Power Project - View from Mandalay State Beach of Mandalay Generating Station Units 1 and 2



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Staff photo dated February 6, 2015

VISUAL RESOURCES - FIGURE 3

Puente Power Project - View from McGrath State Beach Campground to Mandalay Generating Station



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Staff photo dated June 30, 2015

VISUAL RESOURCES - FIGURE 4

Puente Power Project - View of Mandalay Beach County Park from Mandalay State Beach

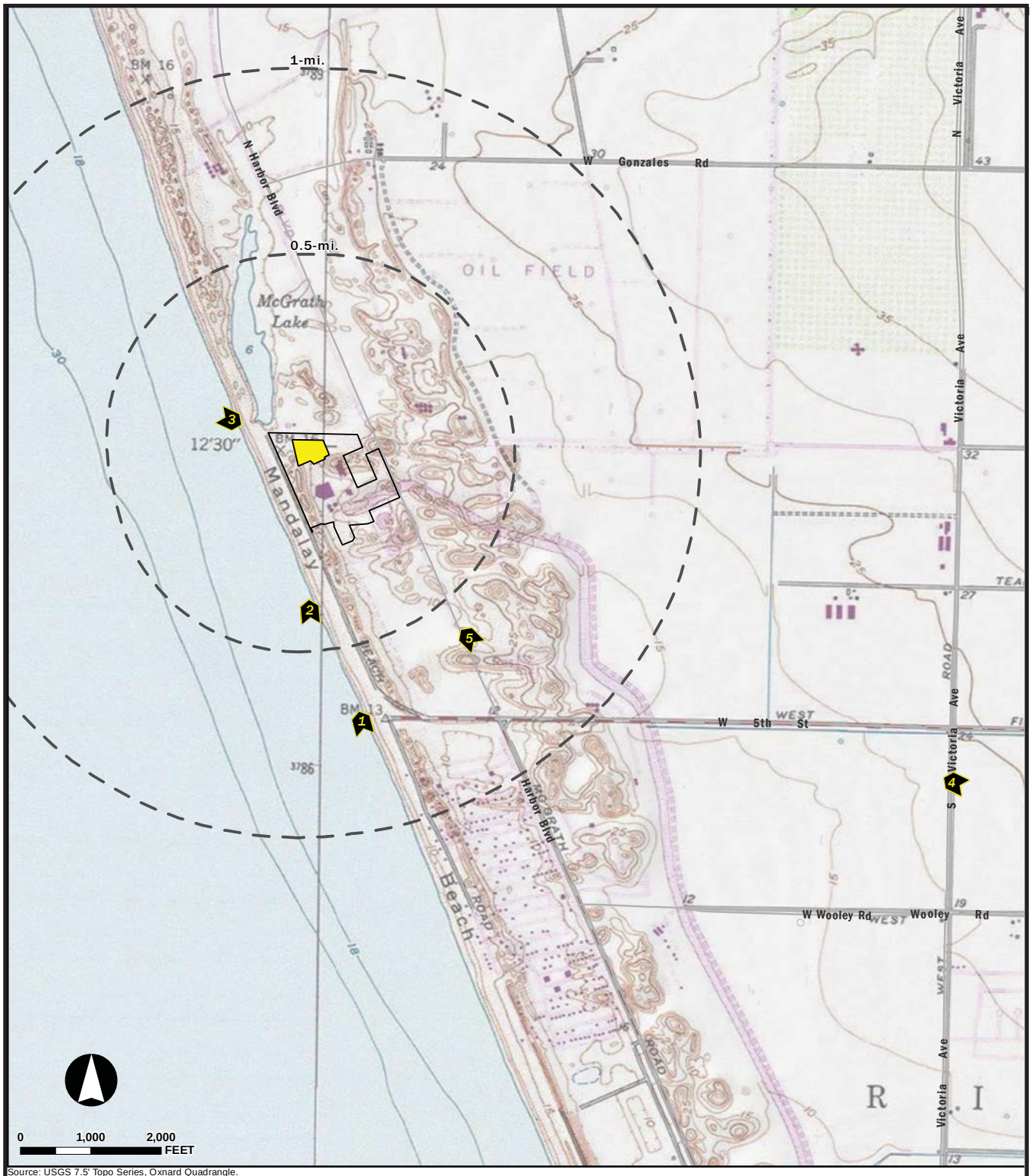


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Staff photo dated February 6, 2015

VISUAL RESOURCES - FIGURE 5

Puente Power Project - Locations of the KOPs evaluated for P3



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 4.13-2

VISUAL RESOURCES - FIGURE 6

Puente Power Project - Existing Public View towards the Proposed Project Site



VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 4.13-4A

VISUAL RESOURCES - FIGURE 7

Puente Power Project - Existing View with a Photographic Simulation of the Project



VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 4.13-4B

VISUAL RESOURCES - FIGURE 8

Puente Power Project - Photographic simulation of the project with the removed MGS units 1 and 2 in 2022



VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Puente Power Project, Project Enhancement and Refinement, Demolition of Mandalay Generating Station Units 1 and 2 (TN 206698), Figure 4.13-2B

VISUAL RESOURCES - FIGURE 9

Puente Power Project - Shows Mandalay State Beach West of Oxnard Shores subdivision

View Looking East



View Looking South



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Staff photo dated April 20, 2016

VISUAL RESOURCES - FIGURE 10

Puente Power Project - Shows the Existing Public View towards the Proposed Project Site



VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 4.13-5A

VISUAL RESOURCES - FIGURE 11

Puente Power Project - Shows the Existing View with a Photographic Simulation of the Project



SOURCE: AFC Figure 4.13-5B

VISUAL RESOURCES - FIGURE 12

Puente Power Project - Photographic simulation of the project with the removed MGS units 1 and 2 in 2022



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Puente Power Project, Project Enhancement and Refinement, Demolition of Mandalay Generating Station Units 1 and 2 (TN 206698), Figure 4.13-3B

VISUAL RESOURCES - FIGURE 13

Puente Power Project - Shows the Existing Public View towards the Proposed Project Site



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 4.13-6A

VISUAL RESOURCES - FIGURE 14

Puente Power Project - Shows the Existing View with a Photographic Simulation of the Project



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 4.13-6B

VISUAL RESOURCES - FIGURE 15

Puente Power Project - Photographic simulation of the project with the removed MGS units 1 and 2 in 2022



VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE:Puente Power Project, Project Enhancement and Refinement, Demolition of Mandalay Generating Station Units 1 and 2 (TN 206698), Figure 4.13-4B

VISUAL RESOURCES - FIGURE 16

Puente Power Project - Shows a Segment of McGrath State Beach north of KOP 3 that includes a portion of beach, fenced dune restoration area, and oil pumping units a half mile away



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Staff photo dated February 6, 2015

VISUAL RESOURCES - FIGURE 17

Puente Power Project - Shows the remainder of Fenced Dune Restoration Area and McGrath Lake



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Staff photo dated February 6, 2015

VISUAL RESOURCES - FIGURE 18

Puente Power Project - Shows the Existing Public View towards the Proposed Project Site



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 4.13-7A

VISUAL RESOURCES - FIGURE 19

Puente Power Project - Shows the Existing View with a Photographic Simulation of the Project



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 4.13-7B

VISUAL RESOURCES - FIGURE 20

Puente Power Project - Photographic simulation of the project with the removed MGS units 1 and 2 in 2022



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Puente Power Project, Project Enhancement and Refinement, Demolition of Mandalay Generating Station Units 1 and 2 (TN 206698), Figure 4.13-5B

VISUAL RESOURCES - FIGURE 21

Puente Power Project - Shows a Segment of Victoria Avenue north of KOP 4



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Staff photo dated February 6, 2015

VISUAL RESOURCES - FIGURE 22

Puente Power Project - Shows the Existing Public View towards the Proposed Project Site



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 4.13-8A

VISUAL RESOURCES - FIGURE 23

Puente Power Project - Shows the Existing View with a Photographic Simulation of the Project



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 4.13-8B

VISUAL RESOURCES - FIGURE 24

Puente Power Project - Photographic simulation of the project with the removed MGS units 1 and 2 in 2022

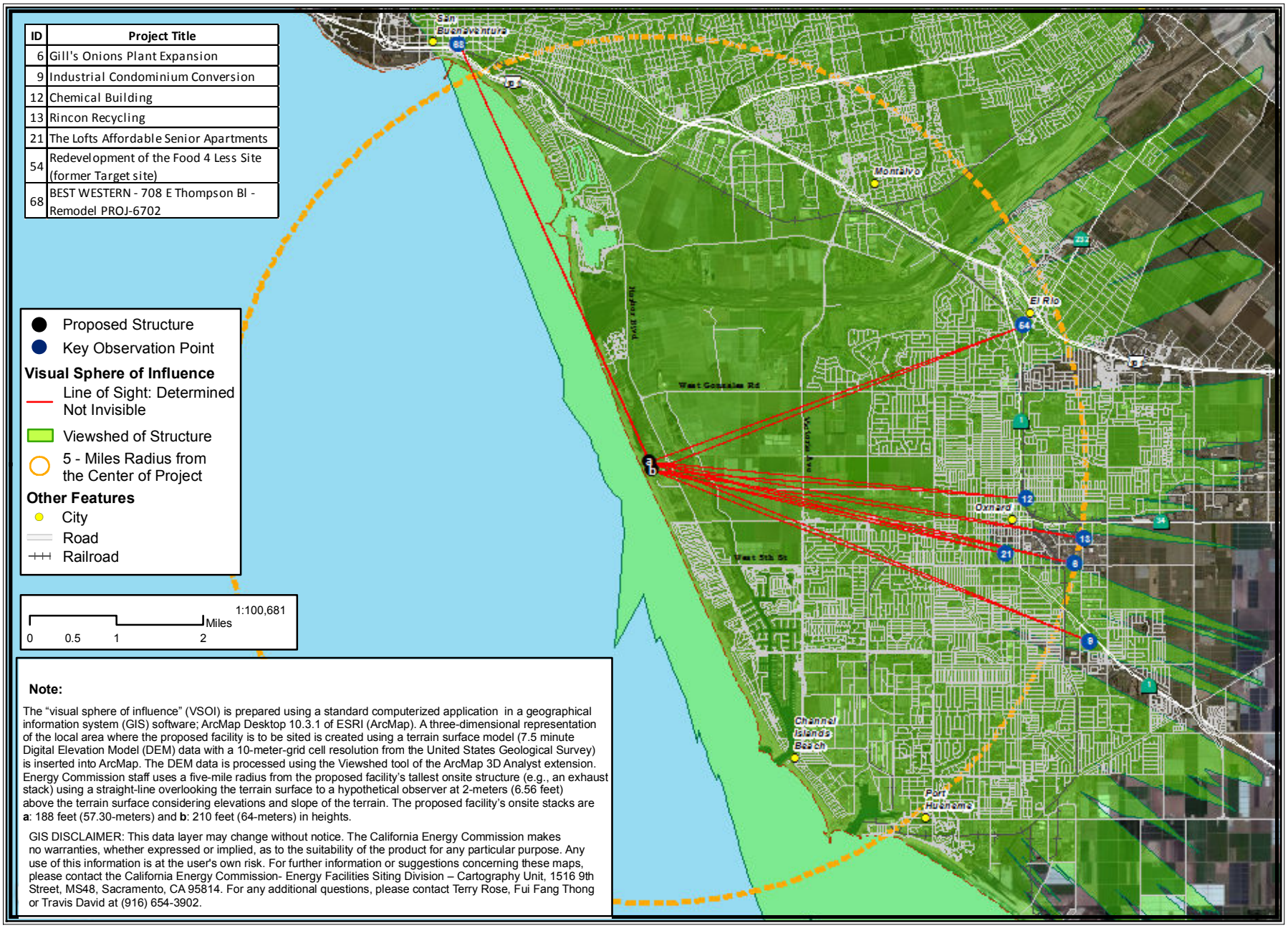


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Puente Power Project, Project Enhancement and Refinement, Demolition of Mandalay Generating Station Units 1 and 2 (TN 206698), Figure 4.13-6B

VISUAL SPHERE OF INFLUENCE - FIGURE 25

Puente Power Project (P3) - Visual Sphere of Influence: Prepared for the Cumulative Analysis



VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: ESRI, USGS - 2012, OpenStreetMap 2015, BING and California Energy Commission

VISUAL RESOURCES - FIGURE 26

Puente Power Project - Aerial View Existing Mandalay Generating Station



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 2.7-3a

VISUAL RESOURCES - FIGURE 27

Puente Power Project - Aerial View of Simulation of Puente Power Plant



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 1-2

VISUAL RESOURCES - FIGURE 28

Puente Power Project - Aerial View of Simulation of the Puente Power Plant with removed MGS units 1 and 2 in 2022



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Puente Power Project, Project Enhancement and Refinement, Demolition of Mandalay Generating Station Units 1 and 2 (TN 206698), Figure 1-1

VISUAL RESOURCES - FIGURE 29

Puente Power Project - View of Mandalay Generating Station Units 1 and 2 from southbound Harbor Boulevard



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Staff photo dated February 6, 2015