Pio Pico Energy Center

Preliminary Staff Assessment

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EXECUTIVE SUMMARY

Eric K. Solorio

INTRODUCTION

This Preliminary Staff Assessment (PSA) contains the California Energy Commission staff's independent evaluation of the Pio Pico Energy Center LLC's Application for Certification (11-AFC-1) for the proposed Pio Pico Energy Center (PPEC). The PSA examines engineering, environmental, public health and safety aspects of the proposed PPEC project, based on the information provided by the applicant and other sources available at the time the PSA was prepared. The PSA contains analyses similar to those normally contained in an Environmental Impact Report (EIR) required by the California Environmental Quality Act (CEQA). When issuing a license, the Energy Commission is the lead state agency under CEQA and its process is functionally equivalent to the preparation of an EIR.

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

After allowing for a public comment period on this PSA, staff will prepare and publish a Final Staff Assessment that will serve as staff's formal testimony in evidentiary hearings to be held by the Energy Commission Committee assigned to hear this case. The Committee will hold evidentiary hearings and will consider the recommendations presented by the staff, applicant, interveners, government agencies, and the public, prior to proposing its decision. In the last step, the full Energy Commission will issue the final decision.

PROJECT LOCATION AND DESCRIPTION

The PPEC is proposed to be developed in an unincorporated area of San Diego County. The site is near the western base of the San Ysidro Mountains at an elevation approximately 635 feet above mean sea level (msl). Terrain elevations are generally flat to the west and south of the project site. More specifically, the site is located in the southeast quadrant of the Alta Road and Calzada de la Fuente intersection, adjacent to the existing Otay Mesa Generating Project (a natural gas-fired power plant). It is comprised of a 10-acre parcel of disturbed and development prepared land within an industrial area. The project site comprises the entire parcel with Assessor's Parcel Number (APN) 648-040-45, and the construction lay down area consists of 6-acres of an adjacent parcel to the south (APN 648-040-46).

The primary access point to the PPEC site would be from Calzada de la Fuente, west of the Otay Mesa Generating Project. An emergency entrance would be accessible via a separate access point from Alta Road.

POWER GENERATION EQUIPMENT AND PROCESS

The proposed PPEC project would be a nominal 300 megawatt (MW) peaking power plant using three General Electric LMS100 natural gas-fired combustion turbine generators. Each combustion turbine generator would utilize a mechanical inlet air chiller to maintain maximum output and efficiency. The power generation process would combust natural gas to rotate a turbine which drives an electrical generator. The electrical generator would deliver power to a step-up transformer in the PPEC switchyard. The transformer would be connected to a 230kV overhead high-voltage, electrical conductor leading from the PPEC switchyard to the neighboring Otay Mesa Generating Project's (OMGP) switchyard. From the OMGP switchyard, the conductor will interconnect with the transmission grid.

The major equipment and facilities include the following:

1. General Electric LMS100 natural gas-fired combustion turbine generators,
2. Inlet air evaporative coolers,
3. Two separate mechanical-draft cooling towers (one wet and one dry),
4. 230kV switchyard w/ overhead high-voltage transmission lines,
5. Air emissions control equipment,
6. Aqueous ammonia storage tank,
7. Above-ground water storage tanks, and
8. Underground utility connections (electrical transmission lines, natural gas pipeline, potable water pipeline, reclaimed water pipeline and a sewer pipeline).

OFFSITE INFRASTRUCTURE IMPROVEMENTS

Electricity Transmission Line

An outgoing 230kV generation tie line will be constructed using either Route A or Route B to connect the plant to the existing San Diego Gas & Electric (SDG&E) Otay Mesa switchyard located approximately 1,800 feet east of the plant site.

Transmission Route A would begin as an overhead power line along the north side of Calzada de la Fuente, extend approximately 1,700 feet east where it would then be routed underground for approximately 400 feet into the Otay Mesa switchyard (total length of Route A would be approximately 2,100 feet). **Transmission Route B** begins as an overhead power line from the eastern edge of the project site, would run south approximately 550 feet, then turn east along the northern border of the parcels with APN 648-040-48 and APN 648-040-43 for 1,400 feet, and finally turn north for approximately 700 feet into the Otay Mesa switchyard (total length of Route B would be approximately 2,650 feet), see **Project Description - Figure 4**.

Natural Gas Line

Natural gas for the PPEC project would be supplied from a new 12-inch, underground, natural gas pipeline to be owned and maintained by SDG&E Company. There are two possible routes for the gas supply pipeline. Both routes would connect to an existing SDG&E natural gas pipeline, but at different locations. **Route A** extends approximately 2,375 feet south along Alta Road, which is the same distance of the original Route A along Alta Road. The Modified Gas Line Route A then turns west on Otay Mesa Road for approximately 2,700 feet, and then turns south on Enrico Fermi Drive for approximately 2,700 feet to Airway Road, at which point it would connect to an existing SDG&E natural gas pipeline, see **Project Description - Figure 4**.

PUBLIC AND AGENCY COORDINATION

On February 22, 2011, the Energy Commission staff issued a notification of receipt of the Application for Certification (AFC), together with a project description, to property owners within 1,000 feet of the proposed project and those located within 500 feet of the linear facilities. Staff sent a similar notification and a copy of the AFC to a comprehensive list of agencies and libraries. Staff's notification letters requested public and agency review and comment on the AFC, and invited continued participation in the Energy Commission's certification process.

The Public Advisors Office (PAO) engages in continuous public outreach that has included placing a notice in the May 12, 2011, issue of the San Diego Union Tribune (South Zone – circ. 48,750) and the May 6, 2011, issue of La Prensa (circ> 25,000) announcing the Informational Hearing and Site Visit for this project. The PAO also issued public notices informing the public of the availability of the project website where the public can obtain more information.

Comments on the proposed project which were provided by agencies and individuals have been considered in staff's analysis. This PSA is intended to provide agencies and the public with an opportunity to review the Energy Commission staff's analysis of the proposed project.

PUBLIC WORKSHOPS

On August 24, 2011, staff conducted a publicly noticed Data Response and Issue Resolution workshop in the City of Chula Vista, Council Chambers and discussed the topics of air quality, biological resources and water resources. The purpose of the workshop was to provide a public forum for staff and the applicant to discuss preliminary conclusions. The workshop was also held to allow members of the community and governmental agencies an additional opportunity to obtain project information, and to offer comments they may have had regarding those aspects of the proposed project.

ENVIRONMENTAL JUSTICE

California law defines environmental justice 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" (Government Code Section 65040.12 and Public Resources Code Section 72000).

All Departments, Boards, Commissions, Conservancies and Special Programs of the Resources Agency must consider environmental justice in their decision-making process if their actions have an impact on the environment, environmental laws, or policies. Such actions that require environmental justice consideration may include:

- Adopting regulations;
- Enforcing environmental laws or regulations;
- Making discretionary decisions of taking actions that affect the environment;
- Providing funding for activities affecting the environment; and
- Interacting with the public on environmental issues

In considering environmental justice in energy facility siting cases, staff uses a demographic screening analysis to determine whether a low-income and/or minority population exists within the potentially affected area of the proposed site. The demographic screening is based on information contained in two documents: *Environmental Justice: Guidance Under the National Environmental Policy Act* (Council on Environmental Quality, December, 1997) and *Guidance for Incorporating Environmental Justice Concerns in EPA's Compliance Analyses* (U.S. Environmental Protection Agency, April, 1998). Due to the change in the sources and methods of collection used by the U.S. Census Bureau, the screening process relies on Year 2010 U.S. Census data to determine the number of minority populations and data from the 2005-2009 ACS to calculate the population below-poverty-level.

Environmental Justice: Guidance Under the National Environmental Policy Act, defines minority individuals as members of the following groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. A minority population is identified when the minority population of the potentially affected area is (1) greater than 50%; or (2) or when one or more U.S. Census blocks in the potentially affected area have a minority population of greater than 50%.
In addition to the demographic screening analysis, staff follows the steps recommended by the U.S. EPA's guidance documents which are: outreach and involvement; and if warranted, a detailed examination of the distribution of impacts on segments of the population.

Staff has followed each of the above steps for the following 11 sections in the PSA: Air Quality, Hazardous Materials, Land Use, Noise, Public Health, Socioeconomics, Soils and Water, Traffic and Transportation, Transmission Line Safety/Nuisance, Visual Resources, and Waste Management. Over the course of the analysis for each of the 11 areas, staff considered potential impacts and mitigation measures and whether there would be a significant impact on an environmental justice population.

As a result of staff's analysis, staff determined there are no environmental justice issues for the proposed Pio Pico Energy Center. Staff identified the following economic

benefits from the project: capital costs; construction and operation payroll; property taxes, sales taxes; and school impact fees.

STAFF'S ASSESSMENT OF THE PROPOSED PROJECT'S IMPACTS

Staff concludes that with implementation of staff's recommended mitigation measures described in the conditions of certification, the PPEC would comply with all applicable laws, ordinances, regulations, and standards (LORS). Staff also concludes that for all environmental areas except biological resources, significant adverse direct, indirect, and cumulative impacts will not occur. At this time staff does not have enough information to determine the feasibility of the applicant's proposed mitigation measures to reduce impacts to biological resources to a less than significant level.

For a more detailed review of potentially significant impacts and the related mitigation measures, please refer to each chapter of the PSA. The conclusions reached in each technical area (chapter) are summarized in the table below.

Executive Summary - Table 1
Summary of Impacts to Each Environmental Area

Technical Area	Complies with LORS	Impacts Mitigated
Air Quality	Yes	Yes
Biological Resources	Yes	*Undetermined*
Cultural Resources	Yes	Yes
Efficiency	Not Applicable	Not Applicable
Facility Design	Yes	Yes
Geology & Paleontology	Yes	Yes
Hazardous Materials	Yes	Yes
Land Use	Yes	Yes
Noise	Yes	Yes
Public Health	Yes	Yes
Reliability	Not Applicable	Not Applicable
Socioeconomic Resources	Yes	Yes
Soil & Water Resources	Yes	Yes
Traffic & Transportation	Yes	Yes
Transmission Line Safety/Nuisance	Yes	Yes
Transmission System Engineering	Yes	Yes
Visual Resources	Yes	Yes
Waste Management	Yes	Yes
Worker Safety and Fire Protection	Yes	Yes

NOTEWORTHY PUBLIC BENEFITS

If approved by the California Energy Commission, the proposed PPEC would provide additional quick-start peaking electric generation capacity for the San Diego Gas & Electric company to support local peak demand and meet resource adequacy requirements as identified by AB 380 (Resource Adequacy) and the California Independent System Operator (CAISO). Additional gross public benefits from the proposed PPEC include capital costs and sales taxes.

CONCLUSIONS

In summary staff has reached the following final conclusions:

- The project is in conformance with all Laws, Ordinances, Regulations and Standards (LORS).
- With the exception of biological resources, by implementing the proposed conditions of certification included in the Preliminary Staff Assessment, the project's construction and operation impacts can be mitigated to a less than significant level.
- Staff and the San Diego Air Pollution Control District each have separately concluded the proposed project would comply with the appropriate rules and requirements of the District and would not contribute to the degradation of the air quality.
- Alternative project sites have been evaluated and staff concluded that none of the alternative sites would avoid or reduce any of the project's significant impacts.
- Alternative technologies have been evaluated and staff concluded that none of the alternative technologies would avoid or reduce any of the project's significant impacts.

PROJECT DESCRIPTION

Eric K. Solorio

INTRODUCTION

On February 9, 2011, the Pio Pico Energy Center, LLC filed an Application for Certification (11-AFC-1) with the California Energy Commission, to construct and operate a simple cycle peaking power plant. The proposed Pio Pico Energy Center (PPEC) would be a nominally rated 300 megawatt (MW) peaking power plant using three, General Electric LMS100, natural gas-fired combustion turbine generators.

The PPEC is proposed to be located at the southeast quadrant of the intersection of Alta Road and Calzada De La Fuente, in an unincorporated area of San Diego County. The PPEC would be owned and operated by the Pio Pico Energy Center, LLC, a Delaware limited liability company.

PROJECT PURPOSE AND OBJECTIVES

The PPEC would provide additional quick-start peaking electric generation capacity in the San Diego Gas & Electric (SDG&E) to support peak demand and meet resource adequacy requirements as identified by AB 380 (Resource Adequacy) and the California Independent System Operator (California ISO).

The AFC describes the proposed PPEC project objectives as follows:

1. To be online by 2014.
2. Be a minimum of 100 megawatts (MW) of peaking and intermediate-class resources.
3. Locate in SDG&E service territory.
4. Operate under a fuel tolling agreement over a 20-year contract.
5. Be capable of operating under all permits at annual capacity factors of a minimum of 30% with an availability of >98%.
6. Heat rates will be no higher than 10,500 British thermal units per kilowatt hour (Btu/kWh).
7. Use flexible resources that can provide regulation during the morning and evening ramps and/or units that can be started and shut down as needed.

PROJECT SETTING AND LOCATION

The project site is near the western base of the San Ysidro Mountains at an elevation approximately 635 feet above mean sea level (msl). Terrain elevations are generally flat to the west and south of the project site.

The project site is adjacent to the existing Otay Mesa Generating Project (a natural gas-fired power plant). The PPEC site is comprised of a 10-acre parcel of disturbed and development-prepared land within an industrial area. The site is located in the southeast quadrant of the Alta Road and Calzada de la Fuente intersection. The project site comprises the entire parcel with Assessor's Parcel Number (APN) 648-040-45, and the construction lay down area consists of 6.00 acres of an adjacent parcel to the south (APN 648-040-46), see **Project Description - Figure 3, Alternative Routes for Electrical Transmission Lines**.

The primary access point to the PPEC site would be from Calzada de la Fuente, west of the Otay Mesa Generating Project. An emergency entrance would be accessible via a separate access point from Alta Road.

Land in the vicinity of the proposed project is designated for heavy industrial, mixed industrial, technology business park, and conservation uses, with heavy industrial uses representing the majority, see **Project Description - Figure 1, Surrounding Land Use Designations.**

PROJECT FEATURES

POWER GENERATION EQUIPMENT AND PROCESS

The proposed PPEC project would be a nominal 300 megawatt (MW) peaking power plant using three General Electric LMS100 natural gas-fired combustion turbine generators. Each combustion turbine generator would utilize a mechanical inlet air chiller to maintain maximum output and efficiency. The power generation process would combust natural gas to rotate a turbine which drives an electrical generator. The electrical generator would deliver power to a step-up transformer in the PPEC switchyard. The transformer would be connected to a 230kV overhead high-voltage, electrical conductor leading from the PPEC switchyard to the neighboring Otay Mesa Generating Project's (OMGP) switchyard. From the OMGP switchyard, the conductor will interconnect with the transmission grid.

The major equipment and facilities include the following:

1. General Electric LMS100 natural gas-fired combustion turbine generators,
2. Inlet air evaporative coolers,
3. Two separate mechanical-draft cooling towers (one wet and one dry),
4. 230kV switchyard w/ overhead high-voltage transmission lines,
5. Air emissions control equipment,
6. Aqueous ammonia storage tank,
7. Above-ground water storage tanks, and

8. Underground utility connections (electrical transmission lines, natural gas pipeline, potable water pipeline, reclaimed water pipeline and a sewer pipeline).

Project Description - Figure 2, Site Plan shows the general arrangement and layout of the proposed facility.

AIR POLLUTION CONTROL

The CTGs employ air pollution emission controls are designed to meet the stringent standards required by the San Diego Air Pollution Control District (SDAPCD). Air pollutants (or "emissions") from the combustion of natural gas in the CTGs will be controlled using state-of-the-art systems. The air pollutants that will be minimized, monitored and controlled include:

- Nitrogen Oxides (NOx)
- Carbon Monoxide (CO)
- Particulate matter (PM)
- Volatile Organic Compounds (VOCs)
- Oxides of sulfur (SOx)

NO_x Production and Control Mechanisms

The PPEC would control NOx emission production during the CTG combustion and post-combustion processes. The CTG combustors will be equipped with water injection capability to reduce thermal NOx formed during the combustion process. Post-combustion NOx emissions control would occur through the catalyst housings on the CTG discharge (one per CTG), which are equipped with selective catalytic reduction (SCR) catalyst modules to further reduce NOx in the CTG exhaust gas. The SCR process will use 19% aqueous ammonia (NH3) as the reducing agent in the presence of high-temperature to activate the catalyst. Diluted NH3 vapor will be injected into the exhaust gas stream via a grid of nozzles located upstream of the catalyst module. The subsequent chemical reaction on the catalyst will reduce NOx to nitrogen and water. The SCR equipment will include a reactor chamber, catalyst modules, NH3 storage system, NH3 vaporization and injection system, and monitoring equipment and sensors.

CO and VOC Emissions

An oxidation catalyst will be installed within the catalyst housing to reduce the concentration of CO in the exhaust gas emitted to atmosphere to no greater than 4.0 ppmvd when adjusted to 15% oxygen (O2) on a dry basis.

Emissions Monitoring

Continuous Emissions Monitoring Systems (CEMS) will sample, analyze, and record fuel gas flow rate, NOx and CO concentration levels, and the percentage of O2 in the stack gas. This system will generate reports of emissions data in accordance with permit requirements and will send alarm signals to the plant's control system when emissions approach or exceed preselected limits.

The remaining air pollutants listed above will be minimized by the use of natural gas as the sole fuel for the CTGs. Particulates from cooling tower drift will also be minimized by using a partial-dry cooling system.

ELECTRICAL EQUIPMENT; TRANSMISSION AND COMMUNICATIONS

Major Electrical Equipment and Systems

The net electric power generated by the PPEC facility would be transmitted to the power grid through a 230kV interconnection with the SDG&E Otay Mesa switchyard. A small percentage of electric power would be utilized on site to power auxiliaries, such as pumps, natural gas compressors, cooling fans, control systems, and general facility electric loads, including lighting, heating, and air conditioning. Some of the auxiliary power would also be converted from alternating current (AC) to direct current (DC) and would be used as back-up power for control systems and other uses.

The CTGs will generate power at 13.8kV, which will be stepped-up by fan-cooled generator step-up unit (GSU) transformers to 230kV for transmission to the utility switchyard and grid. When the units are off-line, the auxiliary power would be back-fed through each step-up and auxiliary transformer. Once the units are running, they will supply their own auxiliary power. Surge arresters will be provided at the high-voltage bushings to protect the transformers from surges on the 230kV system caused by lightning strikes or other system disturbances. The high-voltage side of the step-up transformers would be connected to gas-insulated (SF6) circuit breakers located in the facility's 230kV switchyard.

Step-up Transformers

The PPEC facility's power will be generated at 13.8kV by the three power blocks, each consisting of one GE LMS100 gas turbine generator. The electricity generated at 13.8kV will be stepped up by GSU transformers to 230kV for transmission. The output of each generator will be connected by isolated phase bus to the two-winding, oil-filled GSU transformer. Surge arresters at the high-voltage bushings will protect the transformer from surges in the 230kV systems resulting from lightning strikes or other system disturbances. The transformers will be set on concrete pads with oil containment provisions provided. A deluge type fire protection system will be provided for each step-up transformer.

Facility 230kV Switchyard

The facility's 230kV switchyard will consist of a 230kV radial feed type configuration, 230kV circuit breakers and disconnect switches, and structural bus supports. An outgoing 230kV generation tie line will be constructed using either Route A or Route B to connect the plant to the existing SDG&E Otay Mesa switchyard located approximately 1,800 feet east of the plant site.

Transmission Route A would begin as an overhead power line along the north side of Calzada de la Fuente, extend approximately 1,700 feet east where it would then be routed underground for approximately 400 feet into the Otay Mesa switchyard (total length of Route A would be approximately 2,100 feet). **Transmission Route B** begins as an overhead power line from the eastern edge of the project site, would run south

approximately 550 feet, then turn east along the northern border of the parcels with APN 648-040-48 and APN 648-040-43 for 1,400 feet, and finally turn north for approximately 700 feet into the Otay Mesa switchyard (total length of Route B would be approximately 2,650 feet), see **Project Description - Figure 3, Alternative Routes for Electrical Transmission Lines**.

DC Power Supply

The DC power supply system for balance of plant (BOP) loads will consist of one 125V DC battery bank, two 125V DC full-capacity battery chargers, ground detectors, and distribution panels. The 125V DC battery bank will feed all station DC loads and the uninterruptible power supply (UPS). Additional 125V DC systems may also be supplied as part of the CTG equipment.

Under normal operating conditions, the battery chargers will supply DC power to the DC loads. The battery chargers will receive 480V, three-phase AC power from the AC power supply (480V) system and continuously float charge the battery while supplying power to the DC loads. The ground detection scheme will detect grounds on the DC power supply system.

Under abnormal or emergency conditions when power from the AC power supply (480V) system is unavailable, the battery will supply DC power to the DC power supply system loads. Recharging of a discharged battery will occur whenever 480V power becomes available from the AC power supply (480V) system. The rate of charge will depend on the characteristics of the battery bank, battery charger, and the connected DC load during charging. However, the anticipated maximum recharge time will be 24 hours.

The BOP 125V DC system will be used to provide control power to the 4.16kV switchgear, the 480V SUSs, and critical control circuits.

Communications Equipment

Communication hardware, including fiber-optic terminal equipment and a fiber optic cable would be used for the supervisory control and data acquisition system (SCADA) remote terminal unit (RTU) for station automation, as required by SDG&E.

NATURAL GAS SUPPLY

The combustion turbine generators will fire natural gas exclusively. At full load, each CTG will require up to 819 MMBtu/hr lower heating value (LHV) of natural gas, for a total plant demand of 2,457 MMBtu/hr LHV. SDG&E will build, own, and operate a high pressure gas pipeline from SDG&E's nearby 36-inch 800-psig (per square inch gauge) gas pipeline. There are two possible routes for the gas pipeline.

Natural gas for the PPEC project would be supplied from a new 12-inch, natural gas pipeline to be owned and maintained by SDG&E Company. The piping will be installed underground from the connection at the SDG&E gas transmission line to the point where it enters the project site. At the project site boundary, the piping will be routed to the aboveground gas metering and regulation station. From the metering station the pipeline would be connected to onsite fuel gas compressors.

There are two possible routes for the gas supply pipeline. Both routes would connect to an existing SDG&E natural gas pipeline, but at different locations. **Route A** extends approximately 2,375 feet south along Alta Road, which is the same distance of the original Route A along Alta Road. The Modified Gas Line Route A then turns west on Otay Mesa Road for approximately 2,700 feet, and then turns south on Enrico Fermi Drive for approximately 2,700 feet to Airway Road, at which point it would connect to an existing SDG&E natural gas pipeline, see **Project Description - Figure 3, Alternative Routes for Natural Gas Line**.

Route B would extend approximately 2,375 feet south along Alta Road, turn west on Otay Mesa Road, and continue approximately 7,920 feet to Harvest Road at which point it would connect to the existing SDG&E natural gas pipeline for a total of approximately 10,300 feet. The pipeline will be constructed, owned, and operated by SDG&E.

WATER DEMAND AND SOURCE OF SUPPLY

Process water demands (uses) include plant service water, cooling system makeup, combustion turbine NOx injection (after demineralization), and combustion turbine inlet air evaporative cooler makeup. The CTG injection water will be demineralized using an ultra filtration (UF) system, a reverse osmosis (RO) system, and skid-mounted ion exchange vessels. Process water will also serve as a secondary source of fire protection water.

Water Supply and Treatment

The PPEC will require 379 acre-feet of water per year for operations. The proposed supplier of the water is the Otay Water District (the “District”). The District is working to complete a planned expansion of its regional recycled water delivery system.

Construction of the PPEC is anticipated to begin in February 2013 and the estimated commercial online date is May 2014. In the event that the District’s expanded recycled water system has not been completed or is not operational, PPEC would rely on potable water supplied by the District until such time that recycled water became available. Recycled water will be the primary source of PPEC’s process water during operations.

Process water uses include plant service water, cooling system make-up, combustion turbine injection, combustion turbine evaporative cooler make-up, and secondary fire protection water. Upon the District’s commissioning of the proposed Otay Mesa area recycled water system, the project will make a connection to a recycled water main either along Calzada de la Fuente or along Alta Road. In the event that the recycled water system is not installed before commissioning the PPEC, the project plans to use potable water for all of its process needs. Potable water would be supplied by the Otay Water District.

The connection to Otay Water District potable water will supply facility drinking water, showers, sinks, toilets, eye wash stations, and safety showers in hazardous chemical areas. It will also serve as the facility’s primary source of fire protection water.

WASTEWATER TREATMENT AND DISCHARGE

The Enhanced Water Treatment System (EWT System) consists of: (1) a high-pH RO wastewater treatment system; (2) water recycle piping; (3) Final Wastewater Storage Tank (FWST); and (4) a wastewater tanker truck loading area. The equipment will be housed in the water treatment building. The water treatment equipment consists of a reaction tank and chemical feeds for softening, a ceramic membrane filter, an ion exchange water softener, cartridge filtration, and reverse osmosis (RO) equipment.

Pretreatment processes upstream of the RO are designed to reduce the hardness, metals, and suspended solids in the wastewater. The RO process is designed to operate at an elevated pH that controls biological, organic, and particulate fouling, eliminates scaling due to calcium and metal salts, and increases organics rejection.

Process wastewater (blowdown) from the wet surface-to-air coolers and the oil/water separator effluent will be stored in a 95,000 gallon Process Wastewater Collection Tank while awaiting treatment by the EWT System. Wastewater will be treated to produce both a recycled water stream and a final wastewater effluent. The recycled water stream produced from the EWT System will be piped back to the Raw Water Tank. The RO reject wastewater will be stored in the 20,000 gallon FWST. Water from the FWST will then be pumped into a tanker truck and transported to the City of San Diego's industrial wastewater disposal facility referred to as Pump Station Number 1.

Plant Drains and Wash-down

Area drains will be located by mechanical equipment where it is determined that oil could mix with rainwater or other water sources. The water collected by these drains will go to the oil-water separator, which separates out any oil before the effluent goes to the sewer. The oil-contaminated fluid will be pumped out by a vacuum truck on an as-needed basis and disposed of at a facility specifically qualified to handle such waste. Hazardous containments will not have drains, but they will be pumped out by vacuum pump if hazardous materials are present.

Domestic/Sanitary Wastewater

The sanitary waste drains will be sent to the San Diego County sewer line via the dedicated connection pipe that would also carry the RO rejects and cooling tower blowdown.

STORMWATER HANDLING

Stormwater will be managed by employing Best Management Practices (BMPs) that prevent soil erosion and impacts on surrounding vegetation. Generally, gravel will be used in lieu of concrete and asphalt paving, where possible, to allow for on-site stormwater infiltration. Remaining stormwater will sheet flow into an on-site detention pond located at the northwest corner of the project site. From the basin it will flow to an existing 30-inch stormwater pipeline located along Calzada de la Fuente and from there into the regional storm water management and conveyance system.

PROJECT CONSTRUCTION AND OPERATION

If approved by the Energy Commission, the applicant proposes to initiate construction of the PPEC in February 2013. Construction of the generating facility, from site preparation and grading to commercial operation, is expected to require 16 months and could begin commercial operation by May 2014.

Construction Workforce

The average monthly workforce is projected to be 148 construction craft people, supervisory, support and construction management personnel on site during construction. The peak monthly workforce is projected to be 284 workers. The workforce level will peak between Month six and Month ten of the construction period.

Construction will typically take place between 7:00 a.m. and 5:30 p.m., Monday through Friday. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities.

Power Plant Operations

As an intermediate load and peaking facility, each CTG will be limited to operate no more than 4,000 hr/yr. The plant will be dispatched by SDG&E in accordance with its economic dispatch procedures. The time required for startup is approximately ten minutes. The SDG&E contract allows for 500 startups and shutdowns per unit per calendar year in addition to the 4,000 hours of normal operation.

Plant operations staff will include a total of four operators, four maintenance technicians, one environmental technician, one administrative staff member, one operations supervisor, and a plant manager. The plant will operate and be staffed 24 hours per day, seven days per week. Plant operations will be directed from a control room. All system equipment will be controlled through a programmable logic controller (PLC) or digital control system (DCS) system, and the project equipment will be integrated into this proven control system.

FACILITY CLOSURE

At the end of the PPEC's operational lifespan, the project would cease operation and be shut down. At that time, it would be necessary to ensure that the closure occurred in such a way that public health and safety and the environment were protected from adverse impacts. Although the setting for this project does not appear to present any special or unusual closure problems, it is impossible to foresee what the situation would be in 30 years or more when the project has ceased operation. Therefore, provisions must be made that provide the flexibility to deal with the specific situation and project setting at the time of closure. Laws, ordinances, regulations, and standards (LORS) pertaining to facility closure are identified in the technical sections of this assessment. Facility closure would be consistent with LORS in effect at the time of closure.

Facility closure can be either temporary or permanent. Facility closure can result from two circumstances: 1) the facility is closed suddenly and/or unexpectedly due to unplanned circumstances, such as a natural disaster or other unexpected event (e.g., a

temporary shortage of facility fuel); or 2) the facility is closed in a planned, orderly manner, such as at the end of its useful economic or mechanical life or due to gradual obsolescence. The two types of closure are discussed in the following sections and are discussed in more detail in the **General Conditions** section of this document.

Temporary Closure

Temporary or unplanned closure can result from a number of unforeseen circumstances, ranging from natural disaster to economic forces. For a short term unplanned closure, where there is no facility damage resulting in a hazardous substance release, the facility would be kept "as is," ready to resume operating when the unplanned closure event is rectified or ceases to restrict operations.

In the event that there is a possibility of a hazardous substances release, the project owner would notify the Energy Commission's compliance unit and follow emergency plans that are appropriate to the emergency Risk Management Plan (RMP). Depending upon the expected duration of the shutdown, chemicals may be drained from the storage tanks and other equipment. All waste (hazardous and non-hazardous) would be disposed of according to LORS in effect at the time of the closure. Facility security would be retained so that the facility is secure from trespassers.

Permanent Closure

The anticipated life of the generation facility is 30 years. However, if the facility were economically viable at the end of the 30-year operating period, it could continue to operate for a much longer period of time. As power plant operators continuously upgrade their generation equipment, and maintain the equipment up to industry standards, there is every expectation that the generation facility would have value beyond its expected life.

Closure Mitigation

At the time of facility closure, decommissioning would be completed in a manner that: 1) protects the health and safety of the public; and, 2) is environmentally acceptable. One year prior to a planned closure, the project owner would submit to the Energy Commission a specific decommissioning plan that would include the following:

1. Identification, discussion, and scheduling of the proposed decommissioning activities to include the power plant, applicable transmission lines, and other pertinent facilities constructed as part of the project.

2. Description of the measures to be taken that would ensure the safe shutdown and decommissioning of all equipment, including the draining and cleaning of all tanks, and the removal of any hazardous waste.

3. Identification of all applicable LORS in effect at the time, and how the specific decommissioning would be accomplished in accordance with the LORS.

4. Notification of state and local agencies, including the Energy Commission.

5. Once land is used for industrial or commercial purposes, it rarely reverts back to its natural state. Reuse of the land would probably be encouraged in this case, as

opposed to taking additional land for future industrial or commercial purposes. If the plant site is to return to its natural state, the specific decommissioning plan would include the removal of all aboveground and underground objects and material, and an erosion control plan that is consistent with sound land management practices.

In the event of an unplanned closure due to earthquake damage or other circumstances, the project owner would meet with the Energy Commission's Compliance Project Manager and local agencies and submit a detailed decommissioning closure plan in a timely manner.

No decommissioning plan would be submitted for a temporary shutdown.

NOTEWORTHY PUBLIC BENEFITS

If approved by the California Energy Commission, the proposed PPEC would provide additional quick-start peaking electric generation capacity for the SDG&E to support local peak demand and meet resource adequacy requirements as identified by AB 380 (Resource Adequacy) and the California Independent System Operator (California ISO).

REFERENCES

PPEC 2011a – Pio Pico Energy Center, LLC / G. Chandler (tn 59646). Application for Certification Volume 1 & 2, dated February 9, 2011. Submitted to CEC/Docket Unit on February 9, 2011.

PPEC 2011d – Pio Pico Energy Center, LLC (tn 60177). Data Adequacy Supplement, dated April 1, 2011. Submitted to CEC/Docket Unit on April 1, 2011.

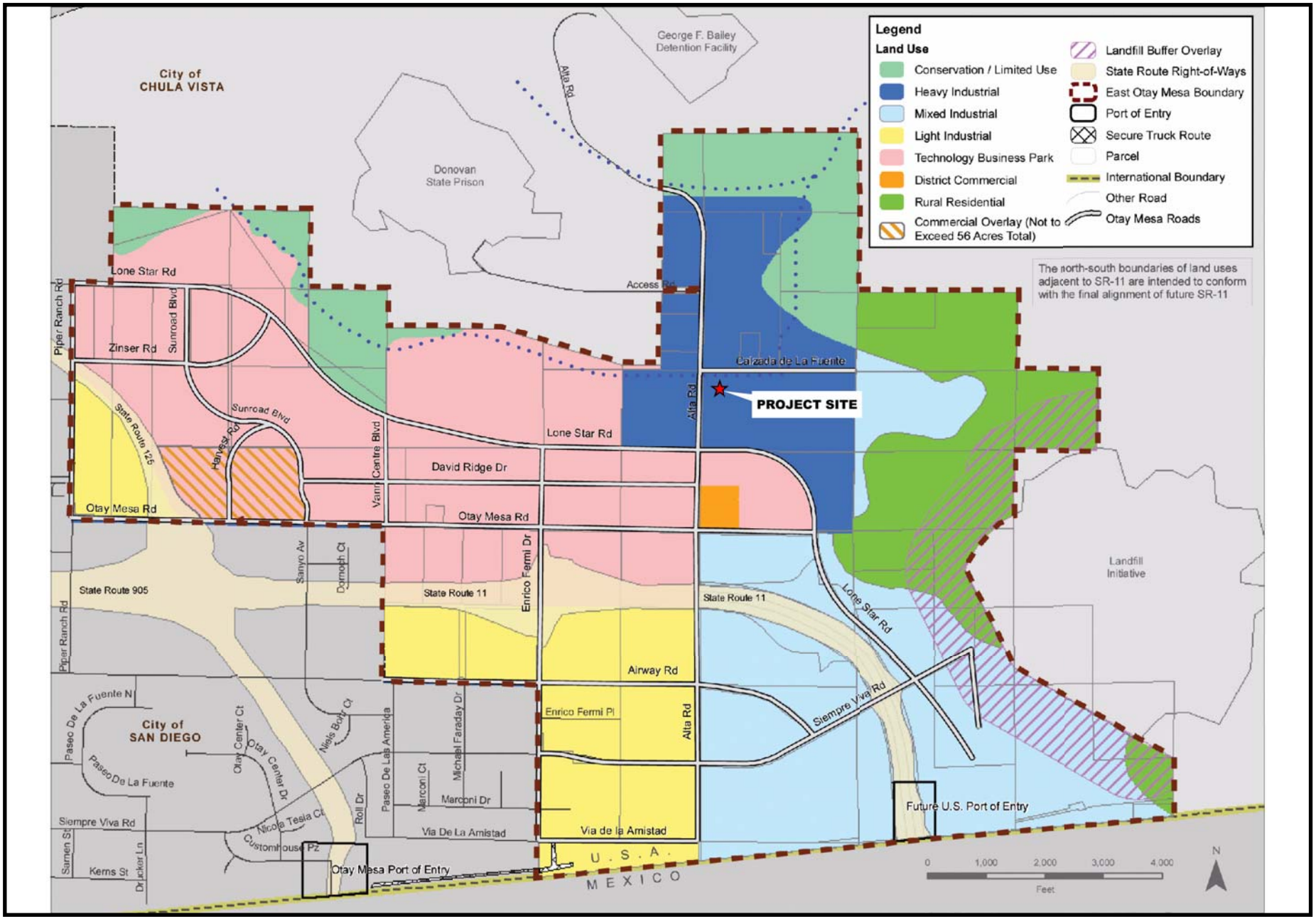
PPEC 2011h – Pio Pico Energy Center, LLC / M. Foster (tn 61017). Pio Pico Energy Center LLC's AFC Refinement, dated June 8, 2011. Submitted to CEC/Docket Unit on June 8, 2011.

PPEC 2011k – Pio Pico Energy Center, LLC / M. Foster (tn 61384). Applicant's Responses to Commission Staff Data Request Set 1 (#1-59), dated July 15, 2011. Submitted to CEC/Docket Unit on July 15, 2011.

PPEC 2011s – Pio Pico Energy Center, LLC/M. Foster (tn 62652). Application for Certification Refinement – Enhanced Water Treatment System, dated October 27, 2011. Submitted to CEC/Docket Unit on October 27, 2011.

PROJECT DESCRIPTION - FIGURE 1

Pio Pico Energy Center - Surrounding Land Use Designations



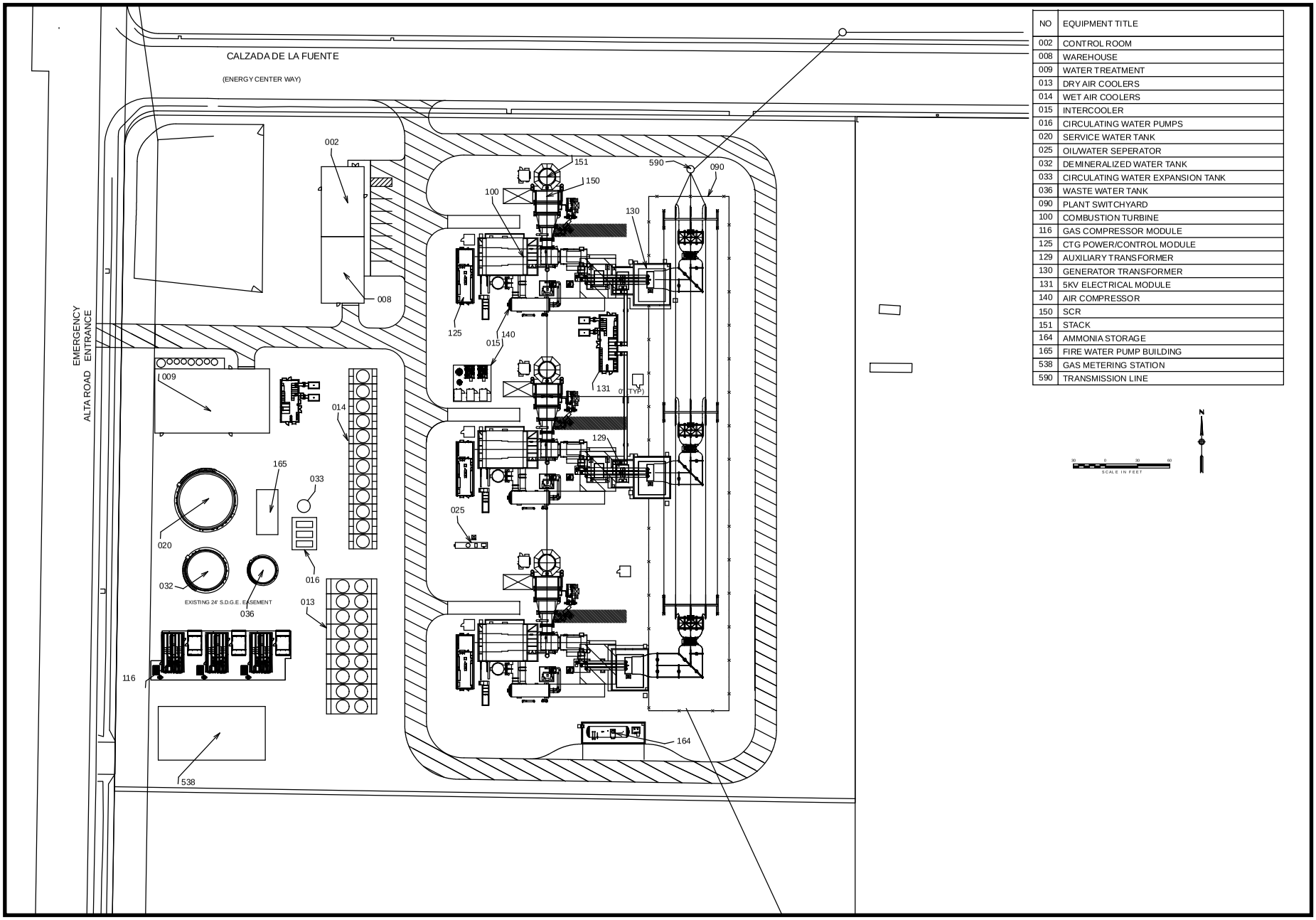
CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 5.9-4

PROJECT DESCRIPTION

PROJECT DESCRIPTION - FIGURE 2

Pio Pico Energy Center - Site Plan



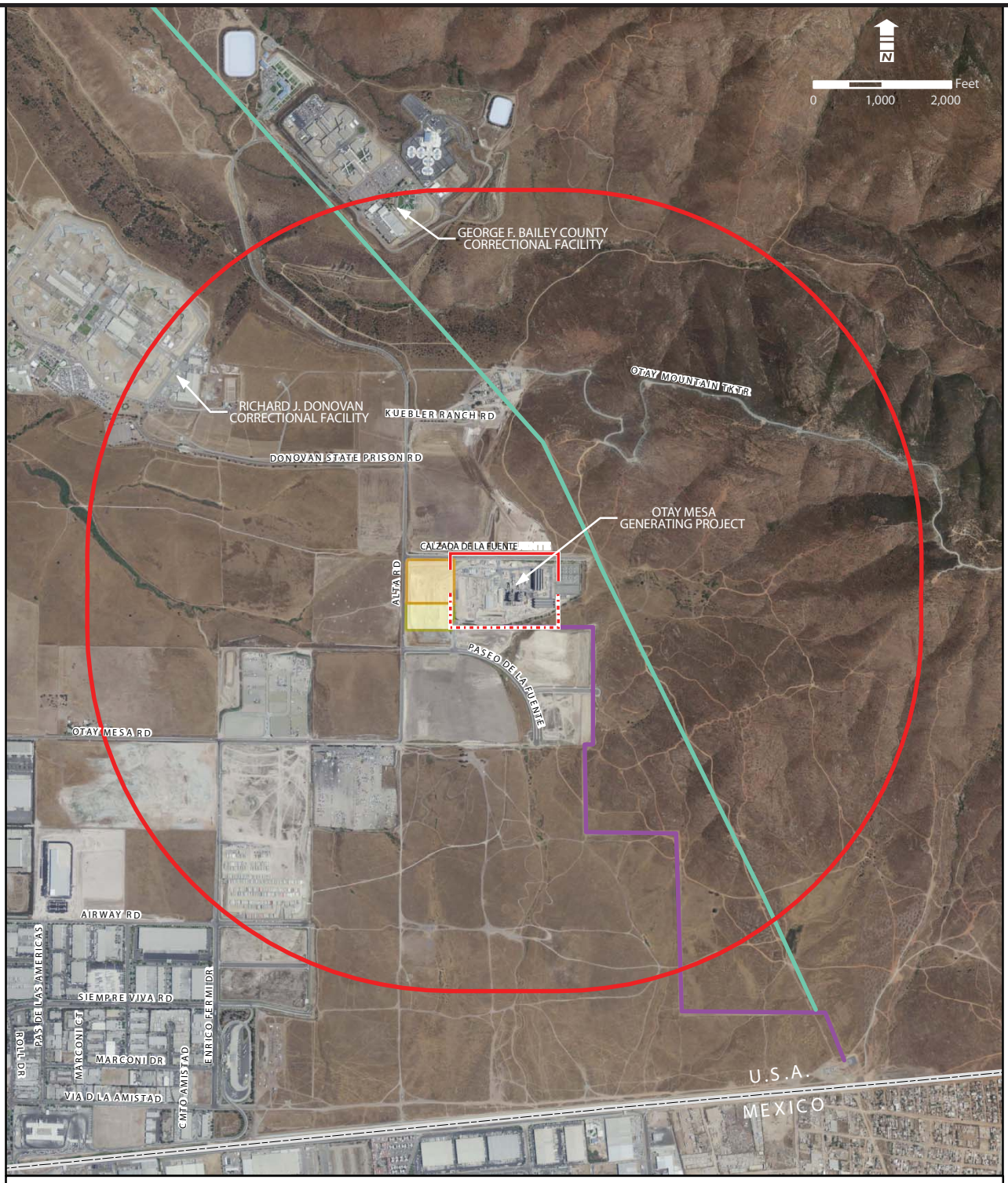
NO	EQUIPMENT TITLE
002	CONTROL ROOM
008	WAREHOUSE
009	WATER TREATMENT
013	DRY AIR COOLERS
014	WET AIR COOLERS
015	INTERCOOLER
016	CIRCULATING WATER PUMPS
020	SERVICE WATER TANK
025	OIL/WATER SEPERATOR
032	DEMINERALIZED WATER TANK
033	CIRCULATING WATER EXPANSION TANK
036	WASTE WATER TANK
090	PLANT SWITCHYARD
100	COMBUSTION TURBINE
116	GAS COMPRESSOR MODULE
125	CTG POWER/CONTROL MODULE
129	AUXILIARY TRANSFORMER
130	GENERATOR TRANSFORMER
131	5KV ELECTRICAL MODULE
140	AIR COMPRESSOR
150	SCR
151	STACK
164	AMMONIA STORAGE
165	FIRE WATER PUMP BUILDING
538	GAS METERING STATION
590	TRANSMISSION LINE

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 3.1-3A

PROJECT DESCRIPTION - FIGURE 3

Pio Pico Energy Center - Alternative Routes for Electrical Transmission Lines

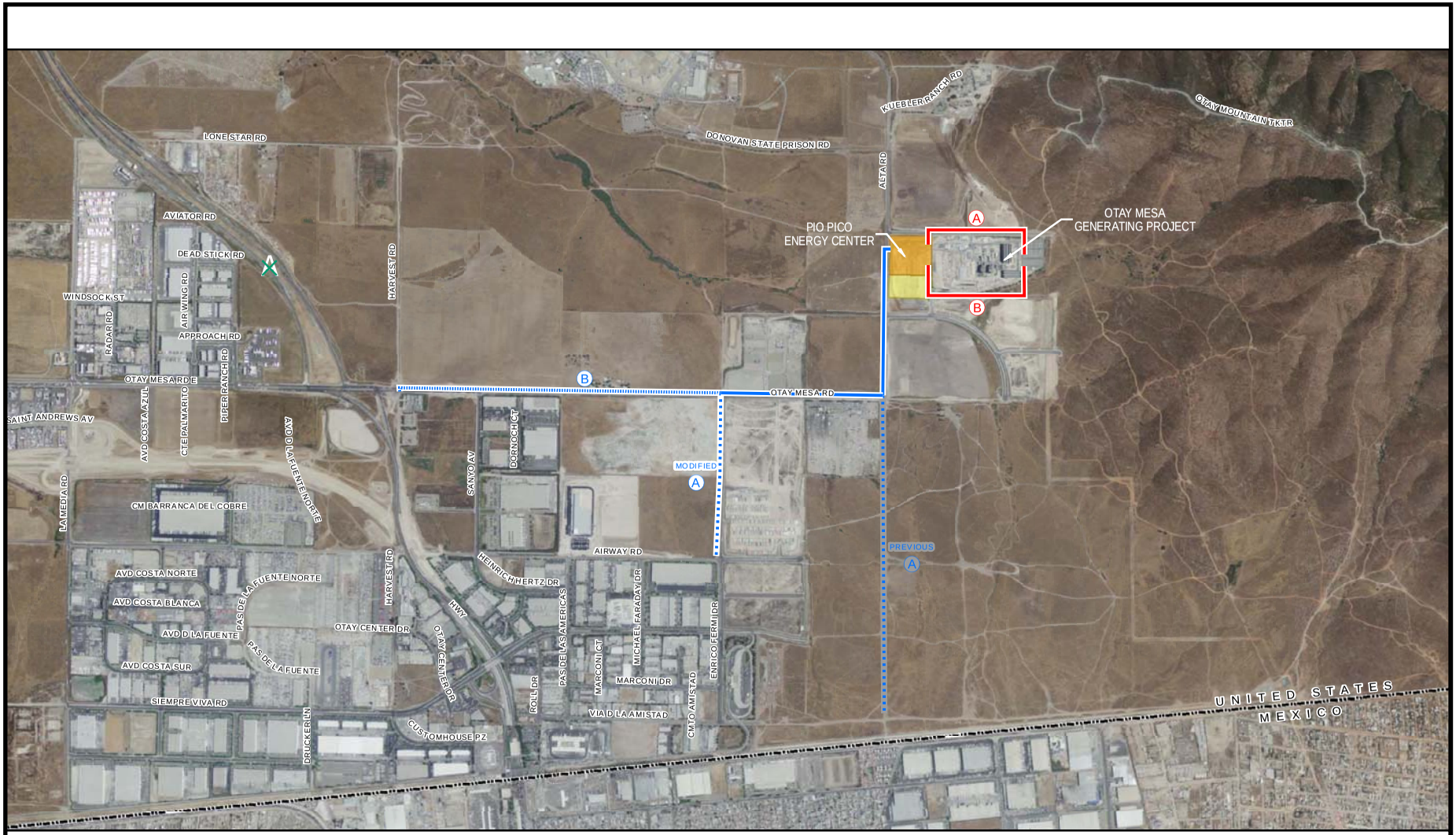


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 3.3-4

PROJECT DESCRIPTION - FIGURE 4

Pio Pico Energy Center - Alternative Routes for Natural Gas Line



LEGEND

- Project Site
- Laydown Area
- United States/Mexico Border
- 230 kV Transmission Line (Route A and Route B)
- Shared Portion of Route B and Modified Route A Natural Gas Line
- Modified Route A Natural Gas Line
- Previous Route A Natural Gas Line
- Route B Natural Gas Line

N

0 750 1,500 Feet

PROJECT DESCRIPTION

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Refinement Document, Figure 3.3-3 (Revised)

Environmental Assessment

AIR QUALITY

Tao Jiang, Ph.D., P.E.

SUMMARY OF CONCLUSIONS

Staff concludes that with the adoption of the attached conditions of certification, the proposed Pio Pico Energy Center (PPEC) would not result in significant air quality related impacts and that the PPEC would comply with all applicable federal, state and San Diego Air Pollution Control District (SDAPCD or district) air quality laws, ordinances, regulations, and standards (LORS).

Staff concludes that mitigation would be provided in the form of emission reduction credits (ERCs) as required by district rules that would fully mitigate emissions of all nonattainment pollutants and their precursors at a minimum ratio of one-to-one and to reduce the potential impacts of the proposed project to less than significant.

Global climate change and greenhouse gas emissions from the project are discussed and analyzed in **AIR QUALITY APPENDIX AIR-1**. The PPEC would emit approximately 0.477 metric tonnes of carbon dioxide per megawatt hour ($MTCO_2$/MWh). Although the PPEC is not subject to the Greenhouse Gases Emission Performance Standard (Title 20, California Code of Regulations, section 2900 et seq.) because it is not a base load power plant, the project's emission rate is less than the limiting standard of 0.5 metric tonnes CO_2 /MWh. Mandatory reporting of the GHG emissions would occur and the Air Resources Board is developing greenhouse gas regulations and a cap–and–trade program for greenhouse gas emission. The project is expected to be subject to these requirements as the regulations are more fully developed and implemented.

INTRODUCTION

This analysis evaluates the expected air quality impacts of the emissions of criteria air pollutants from both the construction and operation of the proposed PPEC project. The PPEC would be constructed adjacent to the existing 590 MW Otay Mesa Generating Project (OMGP) located in San Diego County, California.

Criteria air pollutants are defined as 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), inhalable particulate matter (PM10), and fine particulate matter (PM2.5). In addition, Nitrogen oxides (NOx, consisting primarily of nitric oxide [NO] and NO_2), sulfur oxides (SOx) and volatile organic compounds (VOC) are also analyzed. NOx and VOC readily react in the atmosphere as precursors to ozone. NOx and SOx readily react in the atmosphere to form particulate matter, and are major contributors to acid rain. Global climate change and greenhouse gas (GHG) emissions from the project are discussed and analyzed in the context of cumulative impacts (**AIR QUALITY APPENDIX AIR-1**).

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

- Whether the PPEC is likely to conform with applicable federal, state, and SDAPCD air quality laws, ordinances, regulations and standards (Title 20, California Code of Regulations, section 1744 (b));
- Whether the PPEC is likely to cause significant air quality impacts, including new violations of ambient air quality standards or make substantial contributions to existing violations of those standards (Title 20, California Code of Regulations, section 1743); and
- Whether the mitigation measures proposed for the project are 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, ordinances, regulations, and standards (LORS) and policies pertain to the control of criteria pollutant emissions and the mitigation of air quality impacts. Staff's analysis describes or evaluates the project's compliance with these requirements, as in **Air Quality Table 1**.

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

Applicable Law	Description
Federal	**U.S. Environmental Protection Agency**
Federal Clean Air Act Amendments of 1990, Title 40 Code of Federal Regulations (CFR) Part 50	National Ambient Air Quality Standards (NAAQS).
Clean Air Act (CAA) § 160-169A and implementing regulations, Title 42 United State Code (USC) §7470-7491 40 CFR 51 & 52 (Prevention of Significant Deterioration Program)	Requires prevention of significant deterioration (PSD) review and facility permitting for construction of new or modified major stationary sources of pollutants that occur at ambient concentrations that attain the NAAQS. A PSD permit would be required for the NOx, PM10 and PM2.5 emissions from the proposed PPEC project because it would be a new major stationary source of GHG (exceeding 100,000 tons per year). The PSD program is within the jurisdiction of the U.S. EPA.
CAA §171-193, 42 USC §7501 et seq. (New Source Review)	Requires new source review (NSR) facility permitting for construction or modification of specified stationary sources. NSR applies to sources of designated nonattainment pollutants. This requirement is addressed through SDAPCD Rule 20.3.
40 CFR 60, Subpart KKKK	Standards of Performance for Stationary Combustion Turbines, New Source Performance Standard (NSPS). Requires the proposed simple-cycle system to achieve 2.5 parts per million (ppm) NOx and 1.9 lbs/hr SO_2.
CAA §401 (Title IV), 42 USC §7651(Acid Rain Program)	Requires reductions in NOx and SO_2 emissions, implemented through the Title V program. This program is within the jurisdiction of the SDAPCD with U.S. EPA oversight [SDAPCD Rule 1412].
CAA §501 (Title V), 42 USC §7661(Federal Operating Permits Program)	Establishes comprehensive federal operating permit program for major stationary sources that identify all applicable federal performance, operating, monitoring, recordkeeping, and reporting requirements. Application required within one year following start of operation. This program is within the jurisdiction of the SDAPCD with U.S. EPA oversight [SDAPCD Rule 10 and Rule 20.5].
State	**California Air Resources Board and Energy Commission**
California Health & Safety Code (H&SC) §41700 (Nuisance Regulation)	Prohibits discharge of such quantities of air contaminants that cause injury, detriment, nuisance, or annoyance.

Applicable Law	**Description**
H&SC §40910-40930	Permitting of source needs to be consistent with approved clean air plan. The SDAPCD New Source Review program is consistent with regional air quality management plans.
California Public Resources Code §25523(a); 20 CCR §1752, 2300-2309 (CEC & CARB Memorandum of Understanding)	Requires that Energy Commission decision on AFC include requirements to assure protection of environmental quality.
California Code of Regulations for Off-Road Diesel-Fueled Fleets (13 CCR §2449, et seq.)	General Requirements for In-Use Off-Road Diesel-Fueled Fleets – Requires owners and operators of in-use (existing) off-road diesel equipment and vehicles to begin reporting fleet characteristics to CARB in 2009 and meet fleet emissions targets for diesel particulate matter and NOx in 2010.
Airborne Toxic Control Measure for Idling (ATCM, 13 CCR §2485)	ATCM to Limit Diesel-Fueled Commercial Motor Vehicle Idling – Generally prohibits idling longer than five minutes for diesel-fueled commercial motor vehicles.
Local	**San Diego Air Pollution Control District**
Regulation II – Permits	This regulation sets forth the regulatory framework of the application for and issuance of construction and operation permits for new, altered and existing equipment. Included in these requirements are the federally delegated requirements for New Source Review, Title V Permits, and the Acid Rain Program. Regulation II Rule 20.1 and 20.3 establishes the pre-construction review requirements for new, modified or relocated facilities, in conformance with the federal New Source Review regulation to ensure that these facilities do not interfere with progress in attainment of the national ambient air quality standards and that future economic growth in the San Diego County is not unnecessarily restricted. This regulation establishes Best Available Control Technology (BACT) and emission offset requirements.
Regulation IV – Prohibitions	This regulation sets forth the restrictions for visible emissions, odor nuisance, fugitive dust, various air emissions, and fuel contaminants. This regulation also specifies additional performance standards for stationary gas turbines and other internal combustion engines.
Regulation X – National Standards of Performance	Regulation X incorporates provisions of 40 CFR Part 60, Chapter I, and is applicable to all new, modified,

Applicable Law	Description
(NSPS) for New Stationary Sources	or reconstructed sources of air pollution. Sections of this federal regulation apply to stationary gas turbines (40 CFR Part 60 Subpart KKKK) as described above in the Federal LORS description. Subpart KKKK establish limits of NO_x and SO_2 emissions from the facility as well as monitoring and test method requirements. SDAPCD is delegated enforcement authority for these NSPS through their authority to issue and enforce the Title V permit for this proposed Title V source.
Regulation XII – Toxic Air Contaminants – New Source Review	Regulation XII, Rule 1200, establishes the pre - construction review requirements for new, modified or relocated sources of toxic air contaminants, including requirements for Toxics Best Available Control Technology (T-BACT) if the incremental project health risk exceeds rule triggers.
Regulation XIV – Title V Operating Permits	Regulation XIV, Rule 1401 defines the permit application and issuance as well as compliance requirements associated with the Title V federal permit program. Any new source which qualifies as a Title V facility must obtain a Title V permit within twelve months of starting operation. Regulation XIV, Rule 1412 defines the requirements for the Acid Rain Program, including the requirement for a subject facility to obtain emission allowances for SOx emissions as well as monitoring SOx, NOx, and carbon dioxide (CO_2) emissions from the facility.

SETTING

METEOROLOGICAL CONDITIONS

The semi-permanent subtropical high pressure system over the eastern Pacific Ocean dominates the climate of San Diego County. The summers are typically cool and winters warm in comparison. Ambient temperatures are rarely below freezing or over 100°F. Peak temperatures increase as you move away from the coast. In the summer, the strong high pressure system results in clear skies, high temperatures, and low humidity. Very little precipitation occurs during the summer months because storms are blocked by the high-pressure system. During the winter months, the Pacific High weakens and migrates to the south allowing Pacific storms into California. Temperature, winds, and rainfall are more variable during these months, and stagnant conditions occur more frequently than during summer months. Most of the annual rainfall of 11.51 inches occurs between November and March (WRCC 2011a).

Wind and sunlight affect dispersion of onsite air pollutant emissions and the transport of air pollution to and from the site. Wind roses and wind frequency distributions data collected at Otay Mesa station, about 1.9 miles south of the project site, were provided

in the AFC (PPEC 2011a). The most predominant annual wind direction at this monitoring site is from the northwest. This wind pattern and upper level transport are the dominant transport mechanism for air pollution from the South Coast (Los Angeles) Air Basin to the San Diego Air Basin. There are occasional easterly winds occurring in the 4th and 1st quarters. Occasional southerly winds in the 1st quarter can transport air pollution from Mexico. The wind speeds are normally light or calm, with an average speed of 1.67 meters/second (m/s).

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

AMBIENT AIR QUALITY STANDARDS

The United States Environmental Protection Agency (U.S. EPA) and the California Air Resource Board (ARB) have both established allowable maximum ambient concentrations of criteria air pollutants. These are based upon public health impacts and are called ambient air quality standards. The California Ambient Air Quality Standards (CAAQS), established by ARB, are typically lower (more stringent) than the federally established National Ambient Air Quality Standards (NAAQS).

Ambient air quality standards are designed to protect people who are most susceptible to respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and people engaged in strenuous work or exercise. The ambient air quality standards are also set to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

Current state and federal ambient air quality standards are listed in **Air Quality Table 2**. The averaging time for the various ambient air quality standards (the duration over

AIR QUALITY Table 2
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Standard	California Standard
Ozone (O_3)	8 Hour	0.075 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 ppm (10 mg/m^3)
	1 Hour	35 ppm (40 mg/m^3)	20 ppm (23 mg/m^3)
Nitrogen Dioxide (NO_2)	Annual	53 ppb (100 µg/m^3)	0.030 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)
	3 Hour	0.5 ppm (1300 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	15 µg/m^3	12 µg/m^3
	24 Hour	35 µg/m^3 [b]	—
Sulfates (SO_4)	24 Hour	—	25 µg/m^3
Lead	30 Day Average	—	1.5 µg/m^3
	Rolling 3-Month Average	1.5 µg/m^3	—
Hydrogen Sulfide (H_2S)	1 Hour	—	0.03 ppm (42 µg/m^3)
Vinyl Chloride (chloroethene)	24 Hour	—	0.01 ppm (26 µg/m^3)
Visibility Reducing Particulates	8 Hour	—	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.

Note: [a] Fourth- highest maximum 8 – hour concentration, averaged over 3 years.
[b] 98th percentile of daily maximum value, averaged over 3 years
[c] 99th percentile of daily maximum value, averaged over 3 years

which all measurements taken are averaged) ranges from one hour to one year. The standards are read as a concentration, in parts per million (ppm), parts per billion (ppb), or as a weighted mass of material per unit volume of air, in milligrams (mg or 10^{-3} g) or micrograms (µg or 10^{-6} g) of pollutant in a cubic meter (m^3) of ambient air, drawn over the applicable averaging period.

EXISTING AMBIENT AIR QUALITY

The U.S. Environmental Protection Agency (U.S. EPA), California Air Resource Board (ARB), and the local air district classify an area as attainment, unclassified, or nonattainment, depending on whether or not the monitored ambient air quality data show compliance, insufficient data is available, or non-compliance with the ambient air quality standards, respectively. The PPEC project site is located within the San Diego

Air Basin (SDAB) and is under the jurisdiction of the SDAPCD. The federal and state attainment status of criteria pollutants in the SDAB are summarized in **Air Quality Table 3**.

The operating monitoring station closest to the proposed site is Otay Mesa – Paseo International station, approximately 1.9 miles south of the project. However, since the station is close to the border, the pollutant concentrations recorded are heavily influenced by the emissions from Mexican vehicles which do not meet strict United States and California exhaust standards. Therefore, data from the Chula Vista station, 9 miles northwest of the project site were used to represent background concentrations for the project area. Ambient concentrations of O_3, NO_2, SO_2, CO, PM2.5 and PM10 are all collected from the Chula Vista station.

AIR QUALITY Table 3
Attainment Status of San Diego Air Basin

Pollutants	Attainment Status	
	Federal Classification	**State Classification**
Ozone (1-hr)	No Federal Standard	**Nonattainment**
Ozone (8-hr)	**Nonattainment**	**Nonattainment**
CO	Attainment	Attainment
NO_2	Attainment [a]	Attainment
SO_2	Attainment	Attainment
PM10	Unclassified	**Nonattainment**
PM2.5	Attainment	**Nonattainment**
Sulfates	No Federal Standard	Attainment
Lead	Attainment	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Visibility	No Federal Standard	Unclassified

Source: ARB 2011a, EPA 2011b.
Note: [a] Recommended status, ARB Technical Support Document titled "Recommended Area Designation for the 2010 Federal Nitrogen Dioxide Standards", January 2011.

Nonattainment Criteria Pollutants

Air Quality Table 4 summarizes the existing ambient monitoring data for nonattainment criteria pollutants (ozone and particulate matter) collected by ARB and SDAPCD from monitoring stations near the project site. Data in this table that are marked in bold indicate that the most-stringent current standard was exceeded. Note that an exceedance is not necessarily a violation of the standard, and that only persistent exceedances lead to designation of an area as nonattainment.

AIR QUALITY Table 4
Nonattainment Criteria Pollutants Concentrations, 2004-2010 (ppm or µg/m^3)
Chula Vista station

Pollutant	Averaging Time	2004	2005	2006	2007	2008	2009	2010
Ozone (ppm)	1 hour	**0.097**	**0.093**	0.084	**0.105**	**0.107**	**0.098**	**0.107**
Ozone (ppm)	8 hour	**0.087**	**0.081**	0.068	**0.087**	**0.083**	**0.075**	**0.082**
PM10 (µg/m^3)	24 hour	44	**52**	**51**	**57**	**53**	**57**	43
PM10 (µg/m^3)	Annual	**26.4**	**27.0**	**26.3**	**26.1**	**26.7**	**26.2**	**24.6**
PM2.5 (µg/m^3)	24 hour	30.7	30.2	24.0	**36.1**	28.4	22.2	-
PM2.5 (µg/m^3)	Annual	**12.2**	11.8	11.2	**12.5**	**12.3**	11.4	-

Source: ARB 2011b, EPA 2011c.

Ozone

Ozone is not directly emitted from staionary or mobile sources. It is a secondary pollutant formed through complex chemical reactions between nitrogen oxides (NOx) and volatile organic compounds (VOC). Ozone formation is highest in the summer and fall when abundant sunshine and high temperatures trigger the necessary photochemical reactions, and lowest in the winter. The days with the highest ozone concentrations in this region commonly occur between May and October. The SDAB is classified as a nonattainment area with respect to both state and national ambient air quality standards for ozone.

Respirable Particulate Matter (PM10)

PM10 is a mixture of small solid particles and liquid droplets with a size less than or equal to 10 microns diameter. 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 an even higher contributor to particulate matter of less than 2.5 microns (PM2.5), described more fully below. The nitrate ion is only a portion of the PM nitrate, which can be in the form of ammonium nitrate (ammonium plus nitrate ions) or sodium nitrate.

As shown in **AIR QUALITY Table 4**, the federal 24-hour PM10 standard of 150 µg/m^3 has never been exceeded at the stations near the project site from 2004 to 2010. However, the CAAQS 24-hour standard of 50 µg/m^3 has been exceeded during all these years except 2004 and 2010. The maximum 24 hour concentration recorded during the analysis period was 57 µg/m^3 in 2007 and 2009. The maximum annual

concentration was 27 µg/m^3 in 2005. The SDAB is characterized as “Unclassified” for the federal PM10 standard and nonattainment for state PM10 standard.

Fine Particulate Matter (PM2.5)

PM2.5 refers to particles and droplets with a diameter less than or equal to 2.5 microns. PM 2.5 is believed to pose a greater health risk than PM10 because it can lodge deeply into the lungs due to the small size. PM2.5 includes nitrates, sulfates, organic carbon and elemental carbon, which mainly result from combustion and atmospheric reactions. Almost all combustion-related particles, including those from wood smoke and cooking, are smaller than 2.5 microns. Nitrate and sulfate particles are formed through complex chemical reactions in the atmosphere. Particulate 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 winter make up a large portion of the total PM2.5.

AIR QUALITY Table 4 summarizes the ambient PM2.5 data collected from the Chula Vista station. The national 24-hour average NAQQS of 35 µg/m^3 was only exceeded in 2007 with the maximum value of 36.1 µg/m^3. The annual arithmetic means during the 2004-2009 period are below the federal standard of 15 µg/m^3, but exceed the state standard of 12 µg/m^3 in several years. For purpose of state and federal air quality planning, the SDAB is in attainment with the federal PM2.5 standard but nonattainment with state PM2.5 standard.

Attainment Criteria Pollutants

Carbon Monoxide

Carbon monoxide (CO) is a product of incomplete combustion due to the insufficiency of oxygen content at the point of combustion. Mobile sources are the main sources of CO emissions. Ambient concentrations of CO are highly dependent on motor vehicle activity. CO is a local pollutant, with high concentrations usually found near the emission sources. The highest CO concentrations occur during rush hour traffic in the mornings and afternoons. Ambient CO concentrations attain the air quality standards due to two statewide programs: 1) the 1992 wintertime oxygenated gasoline program, and 2) Phase I and II of the reformulated gasoline program. New vehicles with oxygen sensors and fuel injection systems have also contributed to reduced CO emissions. **AIR QUALITY Table 5** shows the maximum 8-hour CO concentrations at the Chula Vista station.

AIR QUALITY Table 5
Attainment Criteria Pollutants Concentrations, 2004-2010 (ppm)

Pollutants	Averaging Time	2004	2005	2006	2007	2008	2009	2010
CO	1 hour	3.9	2.8	2.7	3.1	2.5	2.1	-
CO	8 hours	2.48	2.13	2.2	2.24	1.87	1.43	1.56
NO_2	1 hour	0.072	0.071	0.074	0.082	0.072	0.065	0.050
NO_2	Annual	0.016	0.016	0.017	0.015	0.015	0.013	0.012
SO_2	1 hour	0.042	0.016	0.017	0.012	0.011	0.007	-
SO_2	3 hours	0.021	0.009	0.013	0.007	0.007	0.005	-
SO_2	24 hours	0.016	0.005	0.006	0.004	0.004	0.003	0.002

Source: ARB 2011b, EPA 2011c.

Nitrogen Dioxide (NO_2)

Nitrogen oxides (NOx) include nitric oxide (NO) and nitrogen dioxide (NO_2). Approximately 75 to 90 percent of the NOx emitted from combustion sources is NO, while the balance is NO_2. NO is oxidized in the atmosphere to NO_2 by oxygen and ozone. High concentrations of NO_2 usually occur during the fall when atmospheric conditions tend to trap ground-level emissions but lack significant photochemical activitiy due to less sunlight. In the summer, the converion rates of NO to NO_2 are high, but the relatively high temperatures and windy conditions (atmospheric unstable conditions) generally disperse pollutants and also engage NO in reactions with VOCs to form ozone. The formation of NO_2 in the presence of ozone is according to the following reaction:

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

Urban areas typically have high daytime ozone concentrations that drop substantially at night as the above reaction takes place, and ozone scavenges the available NO. If ozone is unavailable to oxidize the NO, less NO_2 will form because the reaction is "ozone-limited." This reaction explains why, in urban areas, ground-level ozone concentrations drop at night, while aloft and in downwind rural areas (without sources of fresh NO emissions), ozone concentrations can remain relatively high.

The U.S. EPA implemented a new 1-hour NO_2 standard of 0.1 ppm, which became effective on April 12, 2010. The new standard is expressed as a 3-year average of the 98th percentile of the *daily maximum* 1-hour concentration (i.e., the 8th highest of daily highest 1-hour concentrations). **AIR QUALITY Table 5** shows the maximum 1-hour NO_2 concentrations at the Chula Vista station. Data from 2004 to 2010 show that the area near the project site attains both the state and federal 1-hour NO_2 standards. **AIR QUALITY Table 5** also shows that there are no exceedence of annual federal standard (0.53 ppm) and annual CA standard (0.03 ppm) during the period.

Sulfur Dioxide

Sulfur dioxide is typically emitted as a result of the combustion of fuels containing sulfur. This proposed project would use natural gas, which contains very little sulfur and consequently has very low SO_2 emissions when burned. By contrast, fuels with high sulfur content, such as coal, emit very large amounts of SO_2 when burned. Sources of

SO_2 emissions come from every economic sector and include a wide variety of fuels in gaseous, liquid and solid forms. The whole state is designated attainment for all state and federal SO_2 ambient air quality standards. See **Air Quality Table 5** for maximum 1-hour, 3-hour, and 24-hour SO_2 concentrations at the Chula Vista station.

Summary of Existing Ambient Air Quality

In summary, staff recommends using the background ambient air quality concentrations in **AIR QUALITY Table 6** as the baseline for the modeling and impacts analysis. The highest criteria pollutant concentrations from the last three years of available data collected at the Chula Vista station are used to determine the recommended background values. Concentrations in excess of their ambient air quality standard are shown in bold.

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

The pollutant modeling analysis was limited to the pollutants listed in **AIR QUALITY Table 6**. Therefore recommended background concentrations were not determined for the other criteria pollutants (ozone, lead, visibility, etc.).

PROJECT DESCRIPTION AND PROPOSED EMISSIONS

The proposed PPEC would include the following new stationary sources of emissions (PPEC 2011a):

- Three LMS100 natural-gas fired combustion turbine generators (CTG), each with a nominal capacity 103 MW in a simple-cycle configuration; and
- Partial dry cooling tower system consisting of: an18-cell dry air cooled heat exchangers; and, a 12-cell wet surface air cooler with a water circulation rate of 23,520 GPM and a maximum total dissolved solids (TDS) concentration of 5,600 ppmw.

Separate emissions estimates for the proposed project during the construction phase, initial commissioning, and operation are each described next.

AIR QUALITY Table 6
Staff-Recommeded Background Concentrations (µg/m^3)

Pollutant	Averaging Time	Background	Limiting Standard	Percent of Standard
PM10	24 hour	**57**	50	**114**
	Annual	**26.7**	20	**134**
PM2.5	24 hour	**36.1**	35	**103**
	Annual	**12.5**	12	**104**
CO	1 hour	3565	23,000	16
	8 hour	2489	10,000	25
NO_2	1 hour	154	188	82
	Annual	29	57	51
SO_2	1 hour	31	196	16
	3 hour	18.2	1300	1
	24 hour	10.5	105	10

Source: ARB 2011b, EPA 2011c and Energy Commission Staff Analysis.
Note that an exceedance is not necessarily a violation of the standard, and that only persistent exceedances lead to designation of an area as nonattainment.

Proposed Construction Emissions

Construction of the PPEC is expected to take about 16 months. Onsite construction activities include site preparation, foundation work, installation of major equipment, and construction/installation of major structures. During the construction period, air emissions would be generated from the exhaust of heavy construction equipment and vehicles and fugitive dust generated in areas disturbed by grading, excavating, and erection of facility structures. Construction activities would be scheduled as five days per week, and a single-shift, eight-hour per workday (AFC Section 5.2.4.1, PPEC2011a).

Fugitive dust emissions would result from (AFC Appendix G-2, PPEC2011a):

- Dust entrained during site preparation and grading/excavation at the construction site;
- Dust entrained during on-site travel on paved and unpaved surfaces;
- Dust entrained during aggregate and soil loading and unloading operations; and
- Wind erosion of soil at areas disturbed during construction activities.

Combustion-related emissions would be the result of:

- Exhaust from the diesel construction equipment used for site preparation, grading, excavation, trenching, and construction of onsite structures;
- Exhaust from water trucks used to control construction fugitive dust emissions;
- Exhaust from portable welding machines;
- Exhaust from pickup trucks and diesel trucks used to transport workers and materials around the construction site;

- Exhaust from diesel trucks used to deliver concrete, fuel and construction supplies to the construction site; and
- Exhaust from automobiles used by workers to commute to and from the construction site.

Estimates for the highest daily emissions and total annual emissions over the 16-month construction period are shown in **Air Quality Table 7**.

AIR QUALITY Table 7
PPEC, Estimated Maximum Construction Emissions

Construction Activity	NOx	VOC	PM10	PM2.5	CO	SOx
On-site Construction Equipment (lbs/day)	44.8	4.0	1.5	1.5	19.9	0.1
On-site Fugitive Dust (lbs/day)	--	--	19.7	2.9	--	--
Off-site Worker Travel (combustion) (lbs/day)	6.1	5.8	0.1	0.1	61.2	0.1
Off-site Truck Deliveries (combustion) (lbs/day)	5.1	0.4	0.2	0.0	2.5	0.0
Off-site Dust from travel on dirt roads (lbs/day)	--	--	0.0	0.0	--	--
Maximum Daily Construction Emissions (lbs/day)	**56.0**	**10.3**	**21.5**	**4.5**	**83.6**	**0.1**
On-site Construction Equipment (tpy)	4.7	0.4	0.2	0.2	2.3	0.0
On-site Fugitive Dust (tpy)	--	--	1.6	0.3	--	--
Off-site Worker Travel (combustion) (tpy)	0.2	0.2	0.0	0.0	2.4	0.0
Off-site Truck Deliveries (combustion) (tpy)	0.5	0.0	0.0	0.0	0.3	0.0
Off-site Dust from travel on dirt roads (tpy)	--	--	0.0	0.0	--	--
Peak Annual Construction Emissions (tpy)	**5.5**	**0.7**	**1.9**	**0.5**	**4.9**	**0.0**

Source: PPEC2011a, PPEC 2011x
Note: Different activities have maximum emissions at different times during the construction period; therefore, total maximum daily, monthly, and annual emissions might be different from the summation of emissions from individual activities.

Proposed Initial Commissioning Emissions

New electrical generation facilities must go through initial commissioning phases before becoming commercially available to generate electricity. The commissioning period begins when the turbines are prepared for first fire and ends upon successfully completion of initial performance testing. During this period, initial firing causes greater NOx and CO emissions than those that occur during normal operations because of the

need to tune the combustor, conduct numerous startups and shutdowns, operate under low loads, and conduct testing before emission control systems are functioning or fine-tuned for optimum performance. Gas turbine suppliers can have different commissioning requirements.

The applicant expects that up to 112 hours of operation would be needed to accomplish the various following commissioning activities (AFC Table 5.2-17, PECC 2011a):

- First Fire (operate unit at synchronous idle and perform a system check - 16 hours);
- Sync/AVR Testing (synchronize unit to the electrical grid and operate the unit at various loads to test the voltage regulator – 12 hours);
- SCR Burn-out/AVR Testing (operate the unit at various loads to test the voltage regulator – 20 hours);
- Water Injection Mapping (commissioning of the NOx water injection system -32 hours); and
- SCR Commissioning (unit operation to adjust SCR control – 32 hours).

Air Quality Table 8 presents the applicant's anticipated maximum commissioning emissions of criteria pollutants for the GE LMS 100 turbines. Maximum hourly emissions for NOx and CO would occur with the gas turbine in Sync/AVR testing, SCR Burnout/ AVR testing and water injection mapping phases. Although NOx and CO emissions exceed operating condition emissions during commissioning, emission rates for PM and SOx during initial commissioning are not expected to be higher than normal operating emissions. This is because PM and SOx emissions are proportional to fuel use.

AIR QUALITY Table 8
A2PP, Maximum Initial Gas Turbine Commissioning Emissions

Commissioning Source	NOx	VOC	PM10/ PM2.5	CO	SOx
Each CTG (lb/hr)	50	5	5.5	75	0.6[a]

Source: AFC Table 5.2-17, Appendix G-3 Table G-3.6 (PPEC2011a) and PDOC (SDAPCD 2011a).

Note: [a] Based upon 0.25 gr/100 scf; annual average sulfur content of natural gas.

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Proposed Operation Emissions

Air Quality Tables 9 through **11** summarize the maximum (worst-case) criteria pollutant hourly, daily and annual emissions associated with PPEC's normal and routine operation. Emissions for the combustion turbine system are based upon:

- NOx emissions controlled to 2.5 parts per million by volume, dry basis (ppmvd) corrected to 15 percent oxygen, averaged over any 1-hour period;
- VOC emissions controlled to 2.0 ppmvd with the use of good combustion practices;
- CO emissions controlled to 4.0 ppmvd at 15 percent oxygen for any 3-hour period;
- PM10/PM2.5 emissions at 5.5 lb/hr;

- SOx emissions based on the maximum allowable fuel sulfur content of 0.75 gr/100 scf short-term average and 0.25 gr/100 scf long-term average; and
- CTG firing up to 4,335 hours annually including 500 - hour startups, 500 – hour shudowns (for the worst-case NOx, VOC, and CO estimates) with the option of operating up to 3,335 hours annually in steady-state mode (for the worst-case PM10/PM2.5 and SOx estimates).

Air Quality Table 9 lists the maximum hourly emissions from each CTG estimated by the applicant. Emissions for NOx, CO, and VOC during startup and shutdown events would have higher emissions than during normal operation. Therefore the maximum hourly emission rates in the table reflect the startup/shutdown emissions for these pollurants. Since PM10 and SOx emissions are proportional to fuel use, PM10 and SOx have higher emissions rates during full-load operation. Therefore the maximum hourly emission rates reflect the normal operation emissions for PM10 and SOx.

AIR QUALITY Table 9
PPEC, Maximum Hourly Emissions Rates during Routine Operation (pounds per hour [lb/hr])

Source	NOx	VOC	PM10/ PM2.5	CO	SOx
Each CTG	26.6	5.81	5.5	53.5	1.9[a]
Cooling Tower	--	--	0.7	--	--
Total (three CTGs)	**79.9**	**19.6**	**17.2**	**160.5**	**5.7**

Source: AFC Table 5.2-20 (PPEC2011a), Revised Table G-3.3 (PPEC2011k)
Note: [a] Based upon 0.75 gr/100 scf; short-term average sulfur content of natural gas.

Air Quality Table 10 lists the worst-case emissions during any given day of operation of the proposed PPEC. Daily combustion turbine emissions for NOx, VOC, and CO are based on 4 hours of startup, 4 hours of shutdown mode and 16 hours of full load operation, and for PM10 and SOx daily emissions are based on 24 hours of operation.

AIR QUALITY Table 10
PPEC, Maximum Daily Emissions during Routine Operation (pounds per day [lb/day])

Source	NOx	VOC	PM10/ PM2.5	CO	SOx
Each CTG	288.1	79.2	132.0	428.9	45.6
Cooling Tower	--	--	15.8	--	--
Total (three CTGs)	**864.3**	**237.5**	**411.8**	**1286.6**	**136.8**

Source: AFC Table 5.2-20 (PPEC2011a), Revised Table G-3.3 (PPEC2011k).

Air Quality Table 11 lists maximum potential annual emissions from the proposed project, based on applicant and district calculations reviewed by staff. The operating assumptions include CTG firing up to 4,335 hours annually including 500 hours in startup mode, 500 hours in shutdown mode (for the worst-case NOx, VOC, and CO

estimates) with the option of operating up to 3,375 hours annually in steady-state mode (for the worst-case PM10 and SOx estimates).

AIR QUALITY Table 11
PPEC, Maximum Annual Emissions during Routine Operation (tons per year [tpy])

Source	NOx	VOC	PM10/ PM2.5	CO	SOx
Each CTG	23.5	6.5	11.9	32.1	4.1
Cooling Tower	--	--	1.4	--	--
Total (three CTGs)	**70.4**	**19.4**	**37.2**	**96.4**	**12.4**

Source: AFC Table 5.2-20 (PPEC2011a), Revised Table G-3.3 (PPEC2011k).

Ammonia Emissions
Ammonia (NH_3) is injected into the flue gas stream as part of the SCR system that controls NOx emissions. In the presence of the catalyst, the ammonia and NOx react to form harmless elemental nitrogen and water vapor. However, not all of the ammonia reacts with the flue gases to reduce NOx; a portion of the ammonia passes through the SCR and is emitted unaltered from the stacks. These ammonia emissions are known as ammonia slip.

The applicant proposed an ammonia slip or 5 ppm, and analyzed the health risks at this level (PPEC 2011a, Appendix G-1, page G-5-7). The San Diego APCD requires a maximum ammonia emissions rate of 5 ppm at 15 percent oxygen by dry volume (ppmvd) in the flue gas (SDAPCD2011a). Energy Commission staff notes that control systems can be operated and maintained to routinely achieve less than 5 ppmvd @15percent O_2 for ammonia slip, as established in the Guidance for Power Plant Siting (ARB 1999). Staff recommends that the Energy Commission impose a 5 ppm ammonia limit on this project.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

Staff characterizes air quality impacts as follows: All project emissions of nonattainment criteria pollutants and their precursors (NOx, VOC, PM10, PM2.5, and SOx) are considered significant and must be mitigated. For short-term construction activities that essentially cease before operation of the power plant, our assessment is qualitative and mitigation consists of controlling construction equipment tailpipe emissions and fugitive dust emissions to the maximum extent feasible. For operating emissions, mitigation includes both the Best Available Control Technology (BACT) and emission reduction credits (ERC) or other valid emission reductions to mitigate emissions of both nonattainment criteria pollutants and their precursors.

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

DIRECT/INDIRECT IMPACTS AND MITIGATION

Ambient air quality impacts occur when project emissions cause the ambient concentration of a pollutant to increase. Project-related emissions are the actual mass of emitted pollutants, which are diluted in the atmosphere before reaching the ground. Analysis begins with quantifying the emissions, then uses an atmospheric dispersion model to determine the probable change in ground-level concentrations due to the project.

Dispersion models complete the complex, repeated calculations that consider emissions in the context of various ambient meteorological conditions, local terrain, and nearby structures that affect air flow. For the PPEC, the surface meteorological data used as an input to the dispersion model included three years (2006-2008) of hourly wind speeds and directions measured at the Otay Mesa - Paseo International monitoring station, combined with upper-air meteorological data from the Marine Corps Air Station at Miramar, California.

The applicant conducted the air dispersion modeling based on guidance presented in the *Guideline on Air Quality Models* (EPA, 2005) and the American Meteorological Society/Environmental Protection Agency Regulatory Model known as AERMOD (version 09292). The U.S. EPA designates AERMOD as a "preferred" model for refined modeling in all types of terrain. For determining NO_2 impacts of short-term emissions (1-hour averaging period), NO_2 concentrations are determined by using the Plume Volume Molar Ratio Method (PVMRM) or the Ozone Limiting Method (OLM). Because project NOx emissions would be approximately 90 percent NO that could oxidize into NO_2 with sufficient time, sunlight, and availability of organic compounds or ozone, use of the PVMRM or OLM is appropriate. The applicant conducted NO_2 modeling using PVMRM option to account for the role of ambient ozone levels on the atmospheric conversion rate of NO emissions to NO_2. Concurrent hourly ozone data from SDAPCD Chula Vista monitoring station is used in modeling the NO_2 impacts.

Project-related modeled concentrations are then added to highest background concentrations to arrive at the total impact of the project even if they are not likely to occur at the same time. The total impact is then compared with the ambient air quality standards for each pollutant to determine whether the project's emissions would either cause a new violation of the ambient air quality standards or contribute to an existing violation.

Construction Impacts and Mitigation

This section discusses the project's short-term direct construction ambient air quality impacts assessed by the applicant and, as necessary, independently assessed by Energy Commission staff. The ambient air quality impacts are modeled using AERMOD, and the impacts for NO_2 are modeled using the PVMRM method. Construction modeling for PPEC used three years of meteorological data (2006-2008 from Otay Mesa – Paseo International monitoring station) prepared by SDAPCD, with concurrent ozone data from Chula Vista for modeling NO_2.

Air Quality Table 12 summarizes the results of the modeling analysis for construction activities. The total impact is the sum of the existing background condition plus the maximum impact predicted by the modeling analysis for project activity. The values in **bold** in the Impact and Background columns represent the values that either equal or exceed the relevant ambient air quality standard.

AIR QUALITY Table 12
PPEC, Construction-Phase Maximum Impacts (µg/m^3)

Pollutant	Averaging Time	Modeled Impact	Background	Total Impact	Limiting Standard	Percent of Standard
PM10	24 hour	21	**57**	**78**	50	**156**
	Annual	2.7	**26.7**	**29.4**	20	**147**
PM2.5	24 hour	4.6	**36.1**	**40.7**	35	**116**
	Annual	0.2	**12.5**	**12.7**	12	**106**
CO	1 hour	63	3,565	3,628	23,000	16
	8 hour	34	2,489	2,523	10,000	25
NO_2	1 hour	87	154	241	339	71
	Annual	6	29	35	57	61
SO_2	1 hour	0	31	31	655	5
	24 hour	0	18.2	18.2	105	17
	Annual	0	10.5	10.5	80	13

Source: Revised Table G-2.3 (PPEC 2011x), with independent staff assessment.

Staff believes that particulate matter emissions from construction would cause a significant impact because they would contribute to existing violations of PM10 and PM2.5 ambient air quality standards, and additionally that those emissions can and should be mitigated to a level of insignificance. Significant secondary impacts would also occur for PM10, PM2.5, and ozone because construction-phase emissions of particulate matter precursors (including SOx) and ozone precursors (NOx and VOC) would also contribute to existing violations of these standards. The direct impacts of NO_2, in conjunction with worst-case background conditions, would not create a new violation of the current annual or 1-hour NO_2 state ambient air quality standard. Compliance with the new Federal 1-hour NO_2 is not evaluated because the construction is expected to last only 16 months while this new standard requires a 3-year average of the 98th percentile of the *daily maximum* 1-hour concentration (i.e., the 8th highest of daily highest 1-hour concentrations averaged over three years). Therefore staff does not expect it to have significant impact due to the very limited construction period compared to the 3-year averaging time used for the standard. The direct impacts of CO and SO_2 would not be significant because construction of the project would neither cause nor contribute to a violation of these standards. Mitigation for construction emissions of PM10, PM2.5, SOx, NOx, and VOC would be appropriate for reducing impacts to PM10, PM2.5, NO_2, and ozone.

Construction Mitigation

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 the project (AFC Appendix G-2, PPEC 2011a):

- Unpaved roads 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 trackout to public roadways.
- Construction 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 swept at least twice daily (or less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris.
- At least the first 500 feet of any public roadway exiting from the construction site shall be swept at least twice daily (or less during periods of precipitation) on days when construction activity occurs or on any other day when dirt or runoff from the construction site is visible on 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.

Adequacy of Proposed Mitigation

Staff generally concurs with the applicant's proposed mitigation measures, which mirror many of the staff's mitigation recommendations from previous siting cases. But staff has been proposing additional fugitive dust mitigation, such as requiring the use of soil binders or paving to reduce emissions on unpaved roads, considered necessary to

reduce the high fugitive dust emission potential during construction. Staff incorporates off-road equipment mitigation measures beyond those proposed by the applicant to meet current staff recommendations.

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 believes that the short-term and variable nature of construction activities warrants a qualitative approach to mitigation. Construction emissions and the effectiveness of mitigation varies widely depending on variable levels of activity, the 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 emissions. Staff has determined that the use of oxidizing soot filters is a viable emissions control technology for all heavy diesel-powered construction equipment that does not use an ARB-certified low emission diesel engine. In addition, staff proposes that, prior to beginning construction the applicant should provide an Air Quality Construction Mitigation Plan (AQCMP) that specifically identifies mitigation measures to limit air quality impacts during construction. Staff includes Conditions of Certification **AQ-SC1** through **AQ-SC5** to implement these requirements. These conditions update the applicant's proposed mitigation to be consistent with the conditions of certification adopted in similar prior licensing cases. Compliance with these conditions is expected to greatly reduce or eliminate the potential for significant adverse air quality impacts during construction of the PPEC project.

Operation Impacts and Mitigation

The following section discusses ambient air quality impacts that were estimated by the applicant and subsequently evaluated by Energy Commission staff. The applicant performed a number of direct impact modeling analyses for routine operations, including both fumigation modeling and modeling for impacts during the commissioning activities.

Routine Operation Impacts

A refined dispersion modeling analysis was performed by the applicant to identify off-site criteria pollutant impacts that would occur from routine operational emissions throughout the life of the project. The worst case 1-hour NO_2 and CO impacts reflect startup impacts, and all other impacts reflect the impacts during normal operation. The modeled impacts are extremely conservative, since the maximum impacts are evaluated under a combination of highest allowable emission rates and the most extreme meteorological conditions, which are unlikely to occur simultaneously. Emissions rates are shown in **Air Quality Tables 9** to **11**. The predicted maximum concentrations of criteria pollutants are summarized in **Air Quality Table 13**. PM10 and PM2.5 values are shown in bold because they exceed ambient air quality standards due to high background levels.

AIR QUALITY Table 13
PPEC, Routine Operation Maximum Impacts (µg/m^3)

Pollutant	Averaging Time	Modeled Impact	Background	Total Impact	Limiting Standard	Percent of Standard
PM10	24 hour	**2**	**57**	**59**	**50**	**118**
	Annual	**0.2**	**26.7**	**27**	**20**	**135**
PM2.5	24 hour	--	--	25.9[a]	35	74
	Annual	0.2	**12.5**	**12.8**	**12**	**107**
CO	1 hour	268	3,565	3,833	23,000	17
	8 hour	64	2,489	2,553	10,000	26
NO_2	1 hour (state)	133	154	287	339	85
	1 hour (federal)	--	--	138[b]	188	73
	Annual	0.3	29	29.3	57	51
SO_2	1 hour	8	31	37	196	19
	24 hour	1	18.2	19.2	105	18
	Annual	<0.1	10.5	10.5	80	13

Source: Revised table 5.2-28 (PPEC 2011c), PDOC (SDAPCD 2011a) with independent staff assessment.
Note: [a] The federal 24-hour PM2.5 standard is expressed as 3-year average of the 98th percentile highest daily 24-hour average PM2.5 concentration, including background.
[b] The federal 1-hour NO_2 standard is expressed as 3-year average of the 98th percentile highest daily 1-hour average NO_2 concentration, including background. NO_2 concentrations are determined by using the Plume Volume Molar Ratio Method (PVMRM) with a NO_2/NOx ratio of 0.13.

Staff believes that particulate matter emissions from routine operation could cause a significant impact because they will contribute to existing violations of PM10 and PM2.5 ambient air quality standards (except the federal 24-hour average PM2.5 standard). The federal 24-hour average PM2.5 standard is expressed as the 3 year average of the 98th percentile of PM2.5 24-hour average. **Air Quality Table 13** shows that the project will comply with this statistically based federal standard. Significant secondary impacts would also occur for PM10, PM2.5, and ozone because operational emissions of particulate matter precursors (including SOx) and ozone precursors (NOx and VOC) would also contribute to existing violations of these standards. The direct impacts of NO_2, in conjunction with worst-case background conditions, would not create a new violation of the current annual or state NO_2 ambient air quality standard. The project is also in compliance with the new federal 1-hour NO_2 standard. The direct impacts of CO and SO_2 would not be significant because routine operation of the project would neither cause nor contribute to a violation of these standards. Mitigation for emissions of PM10, PM2.5, SOx, NOx, and VOC would be appropriate for reducing impacts to PM10, PM2.5, NO_2, and ozone.

Secondary Pollutant Impacts

The project's gaseous emissions of NOx, SOx, VOC, and ammonia are precursor pollutants that can contribute to the formation of secondary pollutants, ozone, PM10, and PM2.5. Gas-to-particulate conversion in ambient air involves complex chemical and physical processes that depend on many factors, including local humidity, pollutant

travel time, and the presence of other compounds. Currently, there are no agency-recommended models or procedures for estimating secondary pollutant ozone or particulate nitrate or sulfate formation from a single project or source. However, because of the known relationships of NOx and VOC to ozone and of NOx, SOx, and ammonia emissions to secondary PM10 and PM2.5 formation, it can be said that unmitigated emissions of these pollutants would contribute to higher ozone and PM10/PM2.5 levels in the region. Significant impacts of ozone and PM10/PM2.5 precursors would be mitigated with SDAPCD offsets (**AQ-SC7**).

Ammonia (NH_3) is a particulate precursor but not a criteria pollutant because there is no air quality standard for ammonia. Reactive with sulfur and nitrogen compounds, ammonia can be found from natural sources, agricultural sources, and as a byproduct of tailpipe controls on motor vehicles. Mitigating SOx and NOx emissions would both avoid significant secondary PM10/PM2.5 impacts and reduce secondary pollutant impacts to a less than significant level.

Energy Commission staff recommends limiting ammonia slip emissions to the maximum extent feasible. This level of control is appropriate for avoiding unnecessary ammonia emissions, consistent with staff policy to reduce emissions of all nonattainment pollutant precursors to the lowest feasible levels. Supported by the recent Energy Commission decision on the Orange Grove Project (08-AFC-4), Final Commission Decision, April 2009), which would use similar CTGs controlled to 5 ppmvd NH_3, and consistent with the previously mentioned ARB guidance on ammonia slip, staff recommends an ammonia slip limit of 5 ppmvd.

Fumigation Impacts

There is the potential that higher short-term concentrations of pollutants may occur during fumigation conditions. Fumigation conditions are generally short-term in nature and impacts are only compared to short-term standards. The applicant analyzed the air quality impacts for normal emissions under fumigation conditions using the SCREEN3 Model (AFC Table 5.2-27, PPEC2011a). For comparison, the same operating scenario identified in the operational impact analysis is considered for fumigation. The short-term project impacts during fumigation would not exceed the impacts for routine operation shown in **Air Quality Table 13** above. Therefore, no additional mitigation is required for fumigation impacts.

Commissioning-Phase Impacts

Commissioning impacts would occur over a short-term period within the 112 hours expected to be needed to complete the commissioning. The commissioning emissions estimates are based on partial load operations before the emission control systems become operational, and are shown in **Air Quality Table 8**. Impacts due to PM10, PM2.5, and SO_2 during commissioning would occur under similar exhaust conditions as those for startup while in routine operation because these emissions are proportional to fuel use. **Air Quality Table 14** shows that the commissioning-phase emissions will not cause new exceedances of any state or federal air quality standard, with the exception of the state 1-hour NO_2 standard. The PM10 and PM2.5 emissions from commissioning will contribute to existing violations of ambient air quality standards due to the high background concentrations. The federal 1-hour NO_2 standard is expressed as a 3-year

average of the 98th percentile of the daily maximum 1-hour concentration. Since this is a statistically evaluated standard, it is not applicable to the short commissioning phase. Staff does not expect it to have significant impact due to the very limited commissioning period compared to the 3-year averaging time used for the standard.

AIR QUALITY Table 14
PPEC, Commissioning-Phase Maximum Impacts (µg/m^3)

Pollutant	Averaging Time	Modeled Impact	Background	Total Impact	Limiting Standard	Percent of Standard
PM10	24 hour	**2**	**57**	**59**	**50**	**118**
	Annual	**--**	**26.7**	**--**	**20**	**--**
PM2.5	24 hour	**2.2**	**36.1**	**38.3**	**35**	**109**
	Annual	--	**12.5**	**--**	**12**	**--**
CO	1 hour	375	3,565	3,940	23,000	17
	8 hour	90	2,489	2,579	10,000	26
NO_2	1 hour (state)	**194**	**154**	**348**	**339**	**103**
	Annual	--	29	--	57	--
SO_2	1 hour	3	31	34	196	17
	24 hour	0	18.2	18.2	105	17
	Annual	--	10.5	--	80	--

Source: Revise table 5.2-26 (PPEC 2011c), with independent staff assessment.

The total impact values shown in **Air Quality Table 14** are the sum of maximum project impact and the maximum measured background concentrations, which is the worst-case scenario that may never happen. In order to evaluate if commissioning activities will result in the violation of state 1-hour NO_2 standard, a more refined analysis was conducted by pairing the modeling results with the corresponding measured ambient background concentration. As shown in **Air Quality Table 15,** the actual project impacts are below the standard. Note that this is less conservative than adding the worst case project impacts to the worst case background value, but more representative and reasonable. Staff concludes that commissioning activities are not expected to cause a violation of the state 1-hour NO_2 standard.

Mitigation for Routine Operation

Applicant's Proposed Mitigation

The PPEC includes a combination of BACT and emission reduction credits to mitigate air quality impacts. The equipment description, equipment operation, and emission control devices are provided in **Project Description and Proposed Emissions** (above).

AIR QUALITY Table 15
PPEC, Commissioning-Phase 1-Hour NO_2 State Standard Compliance (µg/m^3)

Modeled Impact[a]	Hour[b]	Background	Total Impact	Limiting Standard	Percent of Standard
186.8	8031620	97.7	284.5	339	84
186.3	8031620	97.7	284.0	339	84
185.6	8031620	97.7	283.3	339	84
185.2	8031620	97.7	282.9	339	83
184.2	8031620	97.7	281.9	339	83
184.0	8031620	97.7	281.8	339	83
186.2	6112719	124.1	310.3	339	92
186.0	6112719	124.1	310.1	339	92
184.8	6112719	124.1	308.9	339	91

Source: Table 5.2-26A (PPEC 2011c), with independent staff assessment.
Note: a. All 1-hour modeling impacts > 184 µg/m^3 among the 3 -years period are presented. Since the maximum background concentration is 154 µg/m^3, any modeled impact below 339 -154=185 µg/m^3 cannot result in an exceedance of the state standard.
b. The hour is formatted as "YMMDDHH".

Emission Controls

PPEC proposes two catalyst systems: the SCR and water injection system to reduce NOx; and the oxidation catalyst system to reduce CO and VOC. Operating exclusively on pipeline quality natural gas limits SOx and particulate matter emissions. Additionally, high-efficiency drift eliminator would be used to minimize paritculate emissions from the cooling tower. Appropriately sized stacks are also used to reduce ground-level concentrations of exhaust constituents.

Emission Offsets

In addition to emission control strategies included in the project design, SDAPCD Rule 20.3 requires PPEC to provide emission reduction credits to offset the NOx emissions. **Air Quality Table 16** summarizes the SDAPCD Rule 20.3 NO_x offset requirements for

AIR QUALITY Table 16
PPEC, Offset and Mitigation Determination and Requirements (TPY)

Pollutant	Project Emissions	District Offset Thresholds	District Offset Requirements	Energy Commission Mitigation
NOx	70.4	50	84.5[b]	70.4
CO[a]	96.4	N/A	--	--
VOC	19.4	50	--	19.4
SO_2	12.4	N/A	--	12.4
PM10/PM2.5	37.2	N/A	--	37.2

Source: SDAPCD 2011a; Independent Staff Assessment.
Note: a. Emission offsets are not required for CO since the San Diego air basin is currently in attainment for CO.
b. NO_x offsets must be provided at a ratio of at least 1.2:1 according to SDAPCD Rule 20.3.

the PPEC, with offsets assumed to originate from shutdowns at other sources with an offset ratio of 1.2-to-1 (SDAPCD 2011a). Energy Commission staff recommended mitigation is also shown in the table.

The proposed PPEC project would be required to surrender offsets according to the operating profile proposed by the applicant. District conditions would limit the facility operation in terms of its annual emissions and its short-term normal operation, rather than through its heat input rate or other parameters. **Air Quality Table 17** summarizes the source and amount of ERCs proposed by the applicant.

AIR QUALITY Table 17
PPEC, Offset Holdings or and Available (TPY)

Source	NOx	VOC	SO_2	PM10/PM2.5
South Bay Units 3&4	29.2	16.2	1.8	27.4
South Bay Units 1&2	24.6	11.2	1.7	22.1
IG&E GP, LLC		37.4		
Total	53.8	64.8	3.5	49.5

Source: SDAPCD 2011a.

Emission Offsets Plan for District Requirements
Air Quality Table 18 summarizes district offset requirements and identifies the compliance plan proposed by PPEC. SDAPCD Rule 20.3 requires ERCs for emissions above 50 TPY of NOx or VOC. PPEC triggers district offset requirements only for NOx. Rule 20.3 further defines that the NOx offsets must be provided at a ratio of 1.2:1. PPEC proposed to to satisfy the district offset requirements of NOx by 1) purchase of ERCs, and 2) interpollutant offsets (VOC for NOx, at a 2:1 ratio defined by Rule 20.3). Both NOx and VOC emissions are recognized precursors to the formation of ambient ozone. Therefore VOC ERCs are also allowed to offset the NOx emissions. **Air Quality Table 18** indicates that PPEC is in compliance with the district's NOx offset requirements.

Emission Mitigation Plan for Energy Commission Requirements
Air Quality Table 19 summarizes Energy Commission mitigation requirements and identifies the offsets proposed by PPEC. The Energy Commission requires mitigation of all nonattainment pollutants and their precursors at a ratio of at least 1:1. Therefore PPEC is required to mitigate the full project emissions of NOx, VOC, SO_2 and PM10/PM2.5. Mitigation of CO is not required because the San Diego air basin is currently in attainment for CO and project CO emission were not found to cause or contribute to impacts.

Consistent with district compliance plan, the applicant proposed to use VOC ERCs to offset NOx emission with an interpollutant ratio of 2:1. The applicant also proposed to use PM10/PM2.5 ERC certificate to mitigate SO_2 increases associated with the project with an interpollutant offset ratio of 1:1. SOx is accepted as one of the major precursors of PM10 and PM2.5 through reaction with ammonia to form ammonium sulfates. Therefore the reductions in PM10/PM2.5 can be equivalent to the reduction in SOx.

AIR QUALITY Table 18
PPEC, District Offset Compliance Plan (TPY)

Source	NOx
Offset Required	84.5
ERCs Owned/Optioned	0.0
ERCs Available - NOx	
South Bay Units 3&4	29.2
South Bay Units 1&2	24.6
Total NOx	53.8
ERCs Available - VOC at 2:1 interpollutant ratio	
South Bay Units 3&4	8.1
South Bay Units 1&2	5.6
IG&E GP. LLC	18.7
Total VOC	32.4
Total ERCs for NOx	86.2
NOx Fully Offset?	Yes

Source: SDAPCD 2011a; Independent Staff Assessment.

AIR QUALITY Table 19
PPEC, Energy Commission Offset Compliance Plan (TPY)

Source	NOx	VOC	SO_2	PM10/PM2.5
Mitigation Required	70.4	19.4	12.4	37.2
ERCs Owned/Optioned	0.0	0.0	0.0	0.0
ERCs Available	53.8	64.8	3.5	49.5
Interpollutant Adjustments	16.6	-33.2	8.9	-8.9
Total ERCs available	70.4	31.6	12.4	40.6
Emissions fully mitigated?	Yes	Yes	Yes	Yes

Source: SDAPCD 2011a; Independent Staff Assessment.

PPEC is therefore in compliance with Energy Commission mitigation requirements and would provide sufficient ERCs or interpollurant ERCs at an offset ratio of at least one-to-one, which satisfies the CEQA mitigation requirements established by Energy Commission staff.

Adequacy of Proposed Mitigation

Energy Commission staff have long held that mitigation needs to be provided to address adverse air quality impacts. Emission reductions of nonattainment pollutants and their precursors at a minimum overall one-to-one ratio of annual operating emissions can provide this mitigation. For this project, the offsets provided by staff-proposed Energy Comission requirements would meet or exceed a one-to-one offset ratio for all ozone and particulate matter precursors. Staff concludes that adverse impacts are mitigated for CEQA purposes if these emissions reductions are required.

The offsets shown in **Air Quality Table 18** and **Table 19** demonstrate that sufficient ERCs are available to PPEC as required by the SDAPCD and Energy Commission to offset the project's NOx, VOC, PM10, and SOx emissions. Although PM2.5 emissions are not required to be offset separately from PM10 emissions, staff notes that the annual total offsets for PM10 would fully offset PM2.5 emissions. How the offsets provide PM2.5 mitigation is discussed separately in **Secondary Pollutant Impacts** (above).

While the one-to-one interpollutant offset ratio for SOx and PM10 has not been established by the district, Energy Commission staff's position since at least the year 2000 for CEQA mitigation in this region is that all nonattainment pollutant and precursor emissions must be reduced by a ratio of at least one-to-one. As discussed above, the relationship of PM10/PM2.5 precursors to PM is well known, although the conversion process is complex. Staff concludes that providing CEQA mitigation at a minimum ratio of 1:1 will reduce secondary PM10/PM2.5 impacts to less than significant for this project.

Staff's evaluation of the adequacy of project mitigation was determined solely based on the merits of this case, including the 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 Proposed Mitigation

Staff proposes Conditions of Certification **AQ-SC6** to ensure that the license is amended as necessary to incorporate future changes to the air quality permits and to ensure ongoing compliance during commissioning and routine operation through quarterly reports (**AQ-SC8**). Staff also proposes a Condition of Certification (**AQ-SC7**) to ensure that significant impacts of ozone and PM10/PM2.5 precursors would be mitigated with the quantity of SDAPCD offsets specified by staff and to ensure agency consultation if substitutions are made to the credits.

Cumulative Impacts and Mitigation

"Cumulative impacts" are defined as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines, §15355). Such impacts can be relatively minor and incremental yet still be significant because of the existing environmental background, particularly when considering other closely related past, present, and reasonably foreseeable future projects.

Criteria pollutants have impacts that are usually (though not always) cumulative by their nature. Rarely will a project itself cause a violation of a federal or state criteria pollutant standard. However, many new sources contribute to violations of criteria pollutant standards because of elevated background conditions. Air districts attempt to reduce background criteria pollutant levels by adopting attainment plans, which are multi-faceted programmatic approaches to attainment. Attainment plans typically include new

source review requirements that provide offsets and use Best Available Control Technology, combined with more stringent emissions controls on existing sources.

The discussion of cumulative air quality impacts includes the following three 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" direct emissions locally when combined with other local major emission sources; and
- a discussion of greenhouse gas emissions and global climate change impacts (in **AIR QUALITY APPENDIX AIR-1**).

Summary of Projections

The SDAPCD has developed several elaborate plans to implement the federal Clean Air Act and state law as it addresses the cumulative air impacts of criteria pollutants in the San Diego 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 standards.

The SDAPCD is the lead agency for managing air quality and coordinating planning efforts for San Diego County and the San Diego Air Basin, so that the federal 8-hour ozone standard is attained in a timely fashion and attainment status with other standards is maintained. The district is responsible for developing those portions of the State Implementation Plan (SIP) and the Air Quality Management Plan (AQMP), that deal with certain stationary and area source controls and, in cooperation with the transportation planning agencies (TPAs), the development of transportation control measures (TCMs). Additionally, the SDAPCD is responsible for providing plans for attaining the California ozone standards and for reducing particulate (PM10 and PM2.5) emissions in compliance with Senate Bill 656 (Sher, Chapter 738, Statutes of 2003). In this role, the SDAPCD is the agency with principal responsibility for analyzing and addressing cumulative air quality impacts, including the impacts of ambient ozone, particulate matter, and CO. The district has summarized the cumulative impacts of ozone, particulate matter, and CO on the air basin from the broad variety of its sources. Analyses of these cumulative impacts, as well as the measures the district proposes to reduce impacts to air quality and public health, are summarized in six publicly available documents. These adopted air quality plans are summarized below.

- Eight-Hour Ozone Attainment Plan (federal 8-hour ozone attainment plan)

Link: http://www.sdapcd.org/planning/8-Hour-O3-Attain-Plan.pdf

- Air Resources Board's Proposed State Strategy for California's 2007 State Implementation Plan (federal 8-hour ozone attainment plan)

Link: http://www.arb.ca.gov/planning/sip/2007sip/2007sip.htm

- Ozone Redesignation Request and Maintenance Plan (federal 1-hour ozone maintenance plan)

Link: www.sdapcd.org/planning/1-Hour-O3-Maint-Plan.pdf

- 2004 Revision to the California State Implementation Plan for Carbon Monoxide (federal CO maintenance plan)

Link: http://www.arb.ca.gov/planning/sip/co/final_2004_co_plan_update.pdf

- 2004 Triennial Revision of the Regional Air Quality Strategy for San Diego County (state ozone attainment plan)

Link: http://www.sdapcd.org/planning/RAQS-04.pdf

- Measures to Reduce Particulate Matter in San Diego County (Health and Safety Code 39614)

Link: http://www.sdapcd.org/planning/SB656StaffRpt.pdf

The final 8-hour ozone attainment plan for San Diego County was submitted by the state in the ARB *Proposed State Strategy for California's 2007 State Implementation Plan* document in late 2007. This plan has not been approved by U.S. EPA, so the approved 1-hour plan is the only currently approved ozone attainment plan for San Diego County although the federal 1-hour ozone standard is no longer in effect. The 2007 State Implementation Plan, when approved by U.S. EPA, will become the ozone attainment plan for the district.

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

The district's Eight-Hour Ozone Attainment plan relies strongly on existing control measures included in district rules and regulations. The ARB proposed strategy for the State Implementation Plan relies primarily on existing control measures, as well as tightening vehicle emissions (for both on- and off-road vehicles) and emissions from other transportation sources, pesticides, and consumer products. No new control strategies that are directly applicable to the project are noted in either of these two ozone planning documents. Indirectly, the on-road and off-road control measures would regulate some of the delivery vehicles and construction equipment used during project construction and operation. U.S. EPA has not yet approved the 8-hour ozone attainment plan for California.

Ozone Redesignation Request and Maintenance Plan

This plan was prepared after the SDAB came into compliance with the federal 1-hour ozone standard in December 2002. U.S. EPA approved this plan and redesignated the San Diego Air Basin as attainment with the 1-hour ozone standard effective July 28, 2003. The specific control measures included in the approved 1-hour ozone maintenance plan are those that were approved for the nonattainment State Implementation Plan (SIP), and no new measures were proposed. The existing measures from the previously approved SIP are included in the district's rules and regulations and ARB vehicle emission regulations. Therefore, compliance with these rules and regulations would ensure that the project conforms to the 1-hour ozone maintenance plan. While the San Diego area is no longer subject to the revoked federal 1-hour ozone standard, the 8-hour ozone plan has not yet been approved by U.S. EPA, so this plan is the only currently approved ozone plan for San Diego County.

2004 Revision to the California State Implementation Plan for Carbon Monoxide

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

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

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

This plan is prepared to determine progress and measures needed to attain California Ambient Air Quality Standards (CAAQS) for ozone, carbon monoxide, nitrogen dioxide, and sulfur dioxide. San Diego County is in attainment with all of these state standards except ozone. This plan describes the extent of ozone air quality improvement during the previous three years, provides a discussion of actual versus forecasted 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 measures determined for further study in this document would apply to the proposed project.

The most recent triennial plan was completed in April 2009. None of the emission reduction measures proposed in the draft document, which includes a Best Available Retrofit Control Technology (BARCT) measure for existing older peaker turbines and a control measure for small boilers (less than 5 million Btu/hr heat input), would impact the new gas turbines that would be installed as part of this project.

Measures to Reduce Particulate Matter in San Diego County

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

document and that are likely to be included in the district's future fugitive dust control rule.

Summary of Conformance with Applicable Air Quality Plans

The applicable air quality plans do not outline any new control measures applicable to the proposed project's operating emission sources. Therefore, compliance with existing district rules and regulations would ensure compliance with those air quality plans. SDAPCD recently evaluated additional fugitive dust control measures and recently adopted a fugitive dust control rule (Rule 55, effective December 24, 2009). Staff's recommended Conditions or Certification **AQ-SC3** and **AQ-SC4** include fugitive dust control measures that should meet or exceed the fugitive dust control requirements of new SDAPCD Rule 55.

Due to the nature of the history of SIP approval and ambient air quality standard reconsiderations by US EPA as described above, the SDAPCD is in the process of re-examining permit requirements for this facility to ensure that all SIP-approved requirements will be met. Staff expects that the Conditions of Certification identified in this Preliminary Staff Assessment will meet all currently-approved state and federal SIP requirements. However, if the SDAPCD permit condition re-examination leads to a need to reconsider Conditions of Certification to ensure compliance, such changes will be incorporated into the Final Staff Assessment.

Localized Cumulative Impacts

The proposed project and other reasonably foreseeable projects could cause impacts that would be locally combined and future projects would introduce stationary sources that are not included in the "background" conditions. Reasonably foreseeable future projects are those that are either currently under construction or in the process of being approved by a local air district or municipality. Projects that have not yet entered the approval process do not normally qualify as "foreseeable" since the detailed information needed to conduct this analysis is not available. Sources that are presently operational are included in the background concentrations. Background conditions also take into account the effects of non-stationary sources.

Projects with stationary sources located up to six miles from the proposed project site usually need to be considered by the cumulative analysis. PPEC requested that the SDAPCD identify potential new stationary sources within six miles of the PPEC site (PPEC2011k, PPEC2011m). The SDAPCD provided district-wide emission inventory with NOx and PM10/PM2.5 emissions greater than 5 TPY, and new projects within 6 miles of PPEC. CO and SO_2 are not considered in the cumulative analysis because the impacts of these two pollutants from PPEC alone are well below the most stringent ambient air quality standards even under the worst case conditions. In addition, no source with CO and SO_2 emissions large enough to create an impact that would threaten the standards exists in the project area. In addition to the PPEC, only four projects would involve emissions increases of more than 5 TPY of NOx or PM10/PM2.5:

- NOx and PM2.5 emissions from Larkspur Energy Facility (a small peaking power plant located 2.5 km west of the PPEC site).
- NOx and PM2.5 emissions from Pacific Recovery Corp (a landfill gas waste-to-energy facility located 9.2 km west of the PPEC site).
- NOx and PM2.5 emissions from Otay Mesa Power Plant (a base-load combined cycle power plant located adjacent to the PPEC site).
- NOx and PM2.5 emissions from CalPeak Border Facility (a small peaking power plant located 2.7km west of the PPEC site).

The maximum modeled cumulative impacts are presented below in **Air Quality Table 20**. The total impact is conservatively estimated by the maximum modeled impact plus existing maximum background pollutant levels.

Air Quality Table 20 shows that PPEC, along with four other existing sources, would not cause new violations for NO_2. However, particulate matter emissions from PPEC would be cumulatively considerable because they would contribute to existing violations of the PM10 and PM2.5 ambient air quality standards.

AIR QUALITY Table 20
PPEC, Ambient Air Quality Impacts from Cumulative Sources (µg/m^3)

Pollutant	Averaging Time	Modeled Impact	Background	Total Impact	Limiting Standard	Percent of Standard
PM10	24 hour	**7.5**	**57**	**64.5**	**50**	**129**
	Annual	**1.9**	**26.7**	**28.6**	**20**	**143**
PM2.5	24 hour	--	--	29.9	35	85
	Annual	1.9	**12.5**	**14.4**	**12**	**120**
NO_2	1 hour (state)	81.8	154	235.8	339	70
	1 hour (federal)	--	--	179	188	95
	Annual	5.9	29	34.9	57	61

Source: PPEC2011k, PPEC2011m, with independent staff assessment.

The PPEC would mitigate emissions through the use of BACT and district required and staff recommended banked or new, owner-funded, emission reductions. Therefore, the cumulative operating impacts after mitigation are considered to be less than significant. Staff has considered the minority population surrounding the site (see **Socioeconomics** Figure 1). Since the project's cumulative air quality impacts have been mitigated to less than significant, there is no environmental justice issue for air quality.

COMPLIANCE WITH LORS

The Preliminary Determination of Compliance (PDOC) for PPEC was released and dated December 16, 2011 (SDAPCD 2011a). Compliance with all district Rules and Regulations was demonstrated to the district's satisfaction in the PDOC, and the PDOC conditions are presented in the Conditions of Certification. The Final Staff Assessment will include any substantive revisions or responses from the district to the comments on the PDOC, as contained in the Final Determination of Compliance (FDOC).

FEDERAL

40 CFR 51, Nonattainment New Source Review. The PDOC includes conditions that would implement the federal nonattainment New Source Review (NSR) permit for PPEC.

40 CFR 52.21, Prevention of Significant Deterioration. The PPEC project is subject to permit requirements under the Prevention of Significant Deterioration (PSD) program. The applicant has submitted the PSD application to EPA in April, 2011.

40 CFR 60, NSPS Subpart KKKK. The CTG proposed for PPEC would be likely to comply with the applicable emission limits by achieving a NOx emission rate of 2.5 ppmvd over any one-hour period except during startup and shutdown periods and during combustor tuning and commissioning.

STATE

PPEC has demonstrated 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. Compliance with the PDOC (SDAPCD 2011a) and the Energy Commission staff's Conditions of Certification enable staff's affirmative finding.

LOCAL

The applicant provided an air quality permit application to the SDAPCD and the district has issued a PDOC (SDAPCD 2011a), which states that the proposed project is expected to comply with all applicable district rules and regulations.

The district rules and regulations specify the emissions control and offset requirements for new sources such as the PPEC. Best Available Control Technology would be implemented, and emission reduction credits (ERCs) for NOx emissions are required by district rules and regulations 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.

As part of the Energy Commission's licensing process, in lieu of issuing a construction permit to the applicant for the PPEC, the district will prepare and present to the Commission a DOC, both a PDOC, and after a public comment period, an FDOC. The DOCs evaluate whether and under what conditions the proposed project would comply with the district's applicable rules and regulations, as described below.

Regulation II – Permits

Rule 20.1 and 20.3 – New Source Review

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

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

This subsection of the rule requires that BACT be installed on a pollutant specific basis if emissions exceed 10 lbs/day for each criteria pollutant (except for CO, for which the PSD BACT threshold is 100 tons per year). This subsection also requires that Lowest Achievable Emission Rate (LAER) be installed on a pollutant specific basis, for federal nonattainment pollutants and precursors, if the project is a new major source or a major modification to an existing major source. Because the district attains the national ambient air quality standards for CO, SO_2, and PM10, LAER does not apply to these particular pollutants (District Rule 20.3(d)(1)(v)). Therefore, LAER is required only for the gas turbines' NOx emissions. BACT is required for VOC, SOx, PM10 and PM2.5 as a subset of PM10 emissions because their emissions are more than 10 lbs/day.

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

This portion of the rule requires that an Air Quality Impact Analysis (AQIA) be performed for air contaminants that exceed the trigger levels published in Table 20.3-1 of the district's Rules and Regulations. For an AQIA of PM10, the rules require that direct emissions and emissions of PM10 precursors be included in the analysis. The PPEC has prepared an AQIA for NOx, CO, and PM10 that was evaluated by district staff as part of the DOC analyses.

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

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

The official public notice and comment period for the PPEC started after newspaper notice publication on December 20, 2011 and ended on January 18, 2012. Rule 20.3(d)(4)(i) requires that the district consider all comments received. The district will consider all comments received before taking final action in the FDOC.

Rule 20.3(d)(5) – Emission Offsets

This portion of the rule requires that emissions of any federal nonattainment criteria pollutant or its precursors, which exceed major source thresholds, be offset with actual emission reductions. The district is a federal nonattainment area only for ozone. Therefore, this rule requires offsets only for NOx and VOC emissions, as ozone precursors, if the project's net emissions increase greater than 25 tons per year for these two pollutants. The PPEC permitted emission increase of NOx is greater than the offset threshold but the permitted emission increase of VOC is below the offset threshold. Therefore, offsets are only required by the district for NOx emissions. Based on the permitted emission limits the net emission increase is 70.4 tons per year of NOx, and at the district required offset ratio of 1.2 to 1, the total NOx Emission Reduction Credit (ERC) requirement for the project is 84.5 tons per year. The FDOC conditions (incorporated into the FSA) will call for all required NOx ERCs to be provided prior to gas turbine start-up.

The applicant will obtain NOx and VOC ERCs (used as ozone precursor interpollutant offsets - VOC for NOx) in quantities necessary to meet the districts offset requirements (see Air Quality Tables 16 to 18). Compliance with this rule is expected.

Rule 20.3(e)(1) – Compliance Certification

This rule requires that the applicant certify that all major stationary sources owned or operated by the applicant in California are in compliance, or on an approved schedule for compliance, with all applicable emission limitations and standards under the federal Clean Air Act. This applicant, PPEC, does not own or operate any other major stationary sources in California. A fund managed by Energy Investors Funds Management, LLC (EIF) indirectly owns PPEC. Other funds managed by EIF also indirectly own, control, and operate two major stationary sources in the state, the Burney Forest Power and the Panoche Energy Center. The required compliance certification for all major sources in the state has been submitted to the district.

Rule 20.5 – Power Plants

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

Regulation IV – Prohibitions

Rule 50 – Visible Emissions

This rule prohibits air contaminant emissions into the atmosphere darker than Ringelmann Number 1 (20 percent opacity) for more than an aggregate of three minutes in any consecutive 60 minute time period. Compliance with this requirement is expected for the gas turbines.

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 gas turbines.

Rule 53 – Specific Air Contaminants

This rule limits emissions of sulfur compounds (calculated as SO_2) to less than or equal to 0.05 percent, by volume, on a dry basis. This rule also contains a limitation restricting particulate matter emissions from gaseous fuel combustion to less than or equal to 0.10 grains per dry standard cubic foot of exhaust calculated at 12 percent CO_2. As shown above the project’s particulate concentration is well below 0.1 grains per dry standard cubic foot, and the use of pipeline quality natural gas fuel would ensure compliance with the sulfur compound emission limitation of this rule.

Rule 55 – Specific Air Contaminants

This rule restricts visible dust from construction activities if they reach beyond the property line for more than 3 minutes in any hour, and requires control of visible roadway dust from track-out/carry-out from truck wheels and truck spillage. Staff recommended fugitive dust conditions (AQ-SC1 through AQ-SC4) are as stringent as or more stringent than the requirements of this rule.

Rule 62 – Sulfur Content of Fuels

This rule requires the sulfur content of gaseous fuels to contain no more than 10 grains of sulfur compounds, calculated as hydrogen sulfide, per 100 cubic feet of dry gaseous fuel (0.23 grams of sulfur compounds, calculated as hydrogen sulfide, per cubic meter of dry gaseous fuel), at standard conditions. The use of pipeline quality natural gas would ensure compliance with this rule.

Rule 69.3 – Stationary Gas Turbines - Reasonably Available Control Technology

This rule limits NOx emissions from gas turbines greater than 0.3 MW to 42 ppm at 15 percent oxygen when fired on natural gas. The rule also specifies monitoring and record keeping requirements. Startups and shutdowns are excluded from being required to comply with these limits.

This rule's emission limits are less stringent than the BACT/LAER requirement of Rule 20.3(d)(1) for normal operation. The district has included conditions for the project to meet this emission limit during initial commissioning, low-load operation, tuning, and transient operation periods, such as during periods of major turbine load shifts.

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

This rule limits NOx emissions from existing and new gas turbines greater than 10 MW to 15 x (E/25) ppm when operating uncontrolled and 9 x (E/25) ppm at 15 percent oxygen when operating with controls and averaged over a one-hour period (where E is the percent thermal efficiency of the unit, typically between 30 to 40 percent for gas turbines). The district calculated this NOx standard to be equivalent to 21.9 ppm when uncontrolled and 12.6 ppm when controlled, based on a thermal efficiency for the turbines of 36.5 percent. The rule also specifies monitoring and record keeping requirements. Startups and shutdowns are excluded from being required to comply with these limits.

This rule's emission limits are less stringent than the BACT/LAER requirement of Rule 20.3(d)(1) for normal operation. The district has included conditions for the project to meet the emission limit specified in Rule 69.3 (excluding startups and shutdowns as defined in Rule 69.3). A continuous emission monitoring system (CEMS) will monitor emissions during combustion turbine operations.

Regulation X – Standards of Performance for New Stationary Sources

Adopts federal New Source Performance Standards (NSPS, 40 CFR, Part 60) by reference. The relevant NSPS subparts are Subpart KKKK (Stationary Combustion Turbines) and Subpart IIII (Stationary Compression Ignition Internal Combustion

Engines). This rule's emission limits are less stringent than the BACT/LAER requirement of Rule 20.3(d)(1) for normal operation. The district's conditions would ensure compliance with the monitoring and recordkeeping requirements of this regulation.

Regulation XI – National Emission Standards for Hazardous Air Pollutants

Adopts federal standards for hazardous air pollutants (HAPs) by reference. The project, as 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 these two regulations.

Regulation XII – Toxic Air Contaminants

Rule 1200 – Toxic Air Contaminants, New Source Review

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

Regulation XIV – Title V Operating Permits

Rule 1401 – General Provisions

This regulation contains the requirements for federal Title V Operating Permits. The applicant is required to submit a revised Title V Operating Permit application no later than 18 months after initial operation of the gas turbines.

Rule 1412 – Federal Acid Rain Program Requirements

This regulation contains the requirements for participation in the federal Acid Rain Program. The applicant is required to submit an Acid Rain Program application to the district at least 24 months prior to initial startup of the gas turbines. The applicant submitted the Acid Rain permit application to the district on September 14, 2011.

CONCLUSIONS

- Construction impacts would contribute to violations of the ozone, PM10, and PM2.5 ambient air quality standards. Staff recommends Conditions of Certification **AQ-SC1** to **AQ-SC5** to mitigate the project's construction-phase impacts to a less than significant level.

- Operation of the project would comply with applicable SDAPCD rules and regulations, including New Source Review, Best Available Control Technology (BACT) requirements, and requirements to offset emission increases.
- The project would neither cause new violations of any NO_2, CO, or SO_2 ambient air quality standard nor contribute to existing violations for these pollutants. Therefore, the project's direct NO_2, CO, and SO_2 impacts are less than significant.
- The project's NOx and VOC emissions would contribute to existing violations of state and federal ozone ambient air quality standards. The ozone precursor offsets required by SDAPCD and shown in Condition of Certification **AQ-SC7** would mitigate the ozone impact to a less than significant level.
- The project PM10 and PM2.5 emissions and the PM10/PM2.5 precursor emissions of SOx would contribute to the existing violations of state and federal PM10 and PM2.5 ambient air quality standards. The PM10/PM2.5 ERCs will be surrendered to mitigate the PM10/PM2.5 impacts to a less than significant level. The offsets would be in sufficient quantities to satisfy Energy Commission staff's long-standing position that all nonattainment pollutant and precursor emissions be offset at least one-to-one.
- Global climate change and greenhouse gas (GHG) emissions from the project are discussed and analyzed in **Air Quality Appendix AIR-1**. As a simple-cycle power plant, PPEC is not designed or intended for base load generation and is therefore not subject to the Emission Performance Standard established by SB 1368 for base load generation. However, the PPEC still shows compliance with the Emission Performance Standard. The project would be subject to the Air Resources Board mandatory GHG reporting requirements and any GHG reduction or trading requirements developed by the ARB as GHG regulations are implemented.

PROPOSED CONDITIONS OF CERTIFICATION

Definitions for Conditions of Certification

Commissioning Period—For each combustion turbine, the commissioning period is the period of time commencing with the initial startup of that turbine and ending after 112 hours of turbine operation, or the date the permittee notifies the district 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. [Rule 20.3(d)(1)]

Compliance Time Periods—For each emission limit expressed as pounds, pounds per hour, or parts per million based on a one-hour or less averaging period or compliance period, compliance shall be based on using data collected at least once every minute when compliance is based on CEMS data except as specified in the district approved CEMS protocol. [Rules 69.3, 69.3.1, and 20.3(d)(1)]

Continuous Emissions Monitoring Protocol—**A** Continuous Emission Monitoring System (CEMS) protocol is a document approved in writing by the District that describes the methodology and quality assurance and quality control procedures for monitoring, calculating, and recording stack emissions from the combustion turbine that is monitored by the CEMS. [Rules 69.3, 69.3.1, and 20.3(d)(1) and 40 CFR Part 60 Subpart KKKK, and 40 CFR Part 75]

Non-operational period—A non-operational period is any five-consecutive-minute period when fuel does not flow to the combustion turbine. [Rule 20.3(d)(1)]

Shutdown—For purposes of determining compliance with the emission limits of this permit, a shutdown period is the 11 minutes period preceding the moment at which fuel flow ceases. [Rule 20.3(d)(1)]

Startup—A startup period is the period of time that begins when fuel flows to the combustion turbine following a non-operational period. For purposes of determining compliance with the emission limits of this permit, the duration of a startup period shall not exceed 30 consecutive minutes. [Rule 20.3(d)(1)]

Tuning—The tuning process is defined as adjustments to the combustion or emission control system that involves operating the combustion turbine or emission control system in a manner such that the emissions control equipment may not be fully effective or operational. Only one gas turbine shall be tuned at any given time. Tuning events shall not exceed 720 unit operating minutes in a calendar day nor exceed 40 hours in a calendar year for each turbine. The district compliance division shall be notified at least 24 hours in advance of any tuning event. For purposes of this condition, the number of hours of tuning in a calendar year is defined as the total unit operating minutes of tuning during the calendar year divided by 60. [Rule 20.3(d)(1)]

Unit Operating Day—For each turbine**,** a unit operating day means any calendar day in which the turbine combusts fuel.

Unit Operating Hour—For each turbine, a unit operating hour means any clock hour in which the turbine combusts fuel for any part of the hour or for the entire hour.

Unit Operating Minute—For each turbine, a unit operating minute means any clock minute in which the turbine combusts any fuel.

Staff-Recommended Conditions of Certification

Staff proposes the following conditions of certification (identified as the **AQ-SCx** series of conditions) to provide mitigation for this project.

AQ-SC1 Air Quality Construction Mitigation Manager (AQCMM): The project owner shall designate and retain an on-site AQCMM who shall be responsible for directing and documenting compliance with conditions **AQ-SC3, AQ-SC4** and **AQ-SC5** for the entire duration of project site construction. The on-site

AQCMM may delegate responsibilities to one or more AQCMM delegates. The AQCMM and AQCMM delegates shall have full access to all areas of construction on the project site, and shall have the authority to stop any or all construction activities as warranted by applicable construction mitigation conditions. The AQCMM and AQCMM delegates may have other responsibilities in addition to those described in this condition. The AQCMM shall not be terminated without written consent of the compliance project manager (CPM).

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

AQ-SC2 Air Quality Construction Mitigation Plan (AQCMP): The project owner shall provide, for approval, an AQCMP that details the steps to be taken and the reporting requirements necessary to ensure compliance with conditions of certification **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 Aiq Quality Construction Mitigation Plan (AQCMP) mitigation measures for purposes of minimizing fugitive dust emission creation from construction activities and preventing all fugitive dust plumes from leaving the project's boundary. The following fugitive dust mitigation measures shall be included in the AQCMP required by **AQ-SC2**, and any deviation from the AQCMP mitigation measures shall require prior CPM notification and approval.

A. The main access roads through the facility to the power block areas will be either paved or stabilized using soil binders, or equivalent methods, to provide a stabilized surface that is similar for the purposes of dust control to paving, that may or may not include a crushed rock (gravel or similar material with fines removed) top layer, prior to initiating construction in the main power block area, and delivery areas for operations materials (chemical, replacement parts, etc.) will be paved prior to taking initial deliveries.

B. All unpaved construction roads and unpaved operation site roads, as they are being constructed, shall be stabilized with a non-toxic soil stabilizer or soil weighting agent that can be determined to be both as efficient or more efficient for fugitive dust control as ARB approved soil stabilizers, and shall not increase any other environmental impacts including loss of vegetation to areas beyond where the soil stabilizers are being applied for dust

control. All other disturbed areas in the project construction site shall be watered as frequently as necessary during grading; and after active construction activities shall be stabilized with a non-toxic soil stabilizer or soil weighting agent, or alternative approved soil stabilizing methods, in order to comply with the dust mitigation objectives of Condition of Certification **AQ-SC4**. The frequency of watering can be reduced or eliminated during periods of precipitation.

C. No vehicle shall exceed 10 miles per hour on unpaved areas within the construction site, with the exception that vehicles may travel up to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions.

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

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

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

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

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

I. Construction areas adjacent to any paved roadway below the grade of the surrounding construction area or otherwise directly impacted by sediment from site drainage shall be provided with sandbags or other equivalently effective measures to prevent run-off to roadways, or other similar run-off control measures as specified in the Storm Water Pollution Prevention Plan (SWPPP), only when such SWPPP measures are necessary so that the condition does not conflict with the requirements of the SWPPP.

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

K. At least the first 500 feet of any paved public roadway exiting the construction site or exiting other unpaved roads en route from the construction site or construction staging areas shall be swept as needed (less during periods of precipitation) on days when construction activity occurs or on any other day when dirt or run-off resulting from the construction site activities is visible on the public paved roadways.

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

M. 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.

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

Verification: The AQCMM shall provide the CPM a Monthly Compliance Report to include the following to demonstrate control of fugitive dust emissions:

A. a summary of all actions taken to maintain compliance with this condition;

B. Copies of any complaints filed with the air district or facility representatives in relation to project construction; and

C. 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-SC4 Dust Plume Response Requirement: The AQCMM or an AQCMM delegate shall monitor all construction activities for visible dust plumes. Observations of visible dust plumes that have the potential to be transported off the project site and within 400 feet upwind of any regularly occupied structures not owned by the project owner indicates that existing mitigation measures are not resulting in effective mitigation. The AQCMP shall include a section detailing how the additional mitigation measures will be accomplished within the time limits specified. 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 shutdown activity. 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 Monthly Compliance Report to include:

A. a summary of all actions taken to maintain compliance with this condition;

B. copies of any complaints filed with the district or facility representatives in relation to project construction; and

C. 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-SC5 Diesel-Fueled Engine Control: The AQCMM shall submit to the CPM, in the Monthly Compliance Report, a table that demonstrates compliance with the AQCMP mitigation measures for purposes of controlling diesel construction-related combustion emissions. Any deviation from the AQCMP mitigation measures requires prior CPM notification and approval.

All off-road diesel construction equipment used in the construction of this facility shall be powered by the cleanest engines available that also comply with the California Air Resources Board's (CARB's) Diesel Emission Control Strategy (verified DECS) for in-use vehicles and shall be included in the Air Quality Construction Mitigation Plan (AQCMP) required by **AQ-SC2**. The AQCMP measures shall include the following, with the lowest-emitting engine chosen in each case, as available:

a. All off-road compression ignition engines shall comply with the California Air Resources Board's (CARB's) Diesel Emission Control Strategy (verified DECS) for in-use, off-road vehicles.

b. To meet the highest level of emissions reduction available for the engine family of the equipment, each piece of diesel-powered equipment shall be powered by a Tier 4 engine, a Tier 4i engine or a Tier 3 engine with a post-combustion retrofit device verified by the CARB or the US EPA. For PM, the retrofit device shall be a particulate filter if verified, or a flow-thru filter, or at least an oxidation catalyst. For NOx, the device shall meet the latest Mark level verified to be available (as of January 2012, none meet this NOx requirement).

c. For diesel powered equipment where the requirements of Part "b" cannot be met, the equipment shall be equipped with a Tier 3 engine without

retrofit control devices or with a Tier 2 or lower Tier engine using retrofit controls verified by CARB or US EPA as the best available control device to reduce exhaust emissions of PM and nitrogen oxides (NOx) 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 can be considered "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 and the highest level of available control using retrofit or Tier 1 engines is being used for the engine in question; or

2. The use of the retrofit device would unduly restrict the vision of the operator such that the vehicle would be unsafe to operate because the device would impair the operator's vision to the front, sides, or rear of the vehicle, or

3. The construction equipment is intended to be on site for 10 work days or less.

d. The CPM may grant relief from a requirement in Part "b" or "c" if the AQCMM can demonstrate a good faith effort to comply with the requirement and that compliance is not practical.

e. The use of a retrofit control device may be terminated immediately provided that the CPM is informed within 10 working days of the termination and a replacement for the equipment item in question meeting the level of control required occurs within 10 work days of termination of the use (if the equipment would be needed to continue working at this site for more than 15 work days after the use of the retrofit control device is terminated) if one of the following conditions exists:

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

f. All equipment with engines meeting the requirements above shall be properly maintained and the engines tuned to the engine manufacturer's specifications. Each engine shall be in its original configuration and the

equipment or engine must be replaced if it exceeds the manufacturer's approved oil consumption rate.

g. Construction equipment will employ electric motors when feasible.

h. If the requirements detailed above cannot be met, the AQCMM shall certify that a good faith effort was made to meet these requirements and this determination must be approved by the CPM.

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

Verification: The AQCMM shall include in the MCR the following to demonstrate control of diesel construction-related emissions:

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

B. A list of all heavy equipment used on site during that month, showing the tier level of each engine and the basis for alternative compliance with this condition for each engine not meeting part "b" requirements. The list shall include the owner of the equipment and a letter from each owner indicating that the equipment has been properly maintained; and

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

AQ-SC6 The project owner shall provide the CPM copies of all district issued Authority-to-Construct (ATC) and Permit-to-Operate (PTO) documents for the facility. The project owner shall submit to the CPM for review and approval any modification proposed by the project owner to any project air permit. The project owner shall submit to the CPM any modification to any permit proposed by the district or U.S. EPA, and any revised permit issued by the district or U.S. EPA, for the project.

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

AQ-SC7 The project owner shall provide emission reductions in the form of offsets or emission reduction credits (ERCs) in the quantities of at least 70.4 tons/year NOx, 19.4 tons/year VOC, 37.2 tons/year PM10, and 12.4 tons/year SOx emissions. The project owner shall demonstrate that the reductions are provided in the form required by the district.

The project owner shall surrender the ERCs from among those that are listed in the district's Final Determination of Compliance Conditions or a modified list, as allowed by this condition. If additional ERCs are submitted, the project owner shall submit an updated table including the additional ERCs to the CPM. The project owner shall request CPM approval for any substitutions, modifications, or additions to the listed credits.

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: The project owner shall submit to the CPM records showing that the project's offset requirements have been met prior to initiating construction. If the CPM approves a substitution or modification to the list of ERCs, the CPM shall file a statement of the approval with the project owner and Commission docket. The CPM shall maintain an updated list of approved ERCs for the project.

AQ-SC8 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 shall specifically note or highlight incidences of noncompliance.

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

District Preliminary Determination Of Compliance Conditions (SDAPCD 2011a)

The following SDAPCD conditions (**AQ-1** to **AQ-79**) apply to each unit of equipment, and the proposed PPEC facility as a whole. After the release of the FDOC, this testimony may need to be updated to reflect any changes in the conditions.

GENERAL CONDITIONS

AQ-1 This equipment shall be properly maintained and kept in good operating condition at all times, and, to the extent practicable, the project owner shall maintain and operate the equipment and any associated air pollution control equipment in a manner consistent with good air pollution control practices for minimizing emissions. [Rule 21 and 40 CFR §60.11]

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

AQ-2 The project owner shall operate the project in accordance with all data and specifications submitted with the application under which this license is issued and district Application No. APCD2010-APP-001251. [Rule 14]

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

AQ-3 The project owner shall provide access, facilities, utilities, and any necessary safety equipment, with the exception of personal protective equipment requiring individual fitting and specialized training, for source testing and inspection upon request of the Air Pollution Control District. [Rule 19]

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

AQ-4 The project owner shall obtain any necessary district permits for all ancillary combustion equipment including emergency engines, prior to on-site delivery of the equipment. [Rule 10]

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

AQ-5 Prior to the initial startup date for any of the three combustion turbines, the project owner shall surrender to the district Class A Emission Reduction Credits (ERCs) in an amount equivalent to 84.5 tons per year of oxides of nitrogen (NOx) to offset the net maximum allowable increase of 70.4 tons per year of NOx emissions for the three combustion turbines described in district Application No. APCD2010-APP-001251. [Rule 20.3(d)(8)]

Verification: The project owner shall submit to the CPM, within 15 days of ERC surrender to the district, information demonstrating compliance with this condition.

AQ-6 A rolling 12-calendar-month period is one of a series of successive consecutive 12-calendar-month periods. The initial 12-month-calendar period of such a series shall begin on the first day of the month in which the applicable beginning date for that series occurs as specified in this permit. [Rule 20.3 (d)(3), Rule 20.3(d)(8) and Rule 21].

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

AQ-7 Pursuant to 40 CFR §72.30(b)(2)(ii) of the Federal Acid Rain Program, the project owner shall submit an application for a Title IV Operating Permit at least 24 months prior to the initial startup of the combustion turbines. [40 CFR Part 72]

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-8 The project owner shall comply with all applicable provisions of 40 CFR Part 73, including requirements to acquire, hold and retire sulfur dioxide (SO_2) allowances. [40 CFR Part 73]

Verification: The project owner shall submit to the CPM and the district the CTG annual operating data and SO_2 allowance information demonstrating compliance with all

applicable provisions of 40 CFR 73 as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-9 All records required by this permit shall be maintained on site for a minimum of five years and made available to the district upon request. [Rule 21]

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

AQ-10 [RESERVED]

AQ-11 [RESERVED]

AQ-12 [RESERVED]

AQ-13 [RESERVED]

AQ-14 [RESERVED]

AQ-15 [RESERVED]

AQ-16 [RESERVED]

COMBUSTION TURBINE CONDITIONS

General Conditions

AQ-17 The exhaust stacks for each combustion turbine shall be at least 100 feet in height above site base elevation. [Rules 20.3(d)(2) and 1200]

Verification: The project owner shall submit to the district and the CPM for review the exhaust stack specification at least 60 days before the installation of the stack.

AQ-18 The combustion turbines shall be fired on Public Utility Commission (PUC) quality natural gas. The permittee shall maintain, on site, quarterly records of the natural gas sulfur content (grains of sulfur compounds per 100 dscf of natural gas) and hourly records of the higher and lower heating values (btu/scf) of the natural gas; and provide records to district personnel upon request. [Rule 20.3(d)(1)]

Verification: The project owner shall submit the quarterly fuel sulfur content values in the Quarterly Operation Reports (**AQ-SC8**) and make the site available for inspection of records by representatives of the district, ARB, and the Energy Commission.

AQ-19 Unless otherwise specified in this permit or the district approved CEMS protocol, all continuous monitoring data shall be collected at least once every minute. [Rules 69.3, 69.3.1, and 20.3(d)(1)]

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

Emission Limits

AQ-20 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 69.3, 69.3.1, and 20.3(d)(1) and 40 CFR Part 60 Subpart KKKK, and 40 CFR Part 75]

Verification: Source test results demonstrating compliance with this condition shall be provided to the CPM and are due within the timeframes specified in Conditions **AQ-48** and **AQ-49**. CEMS data summaries shall be submitted to the CPM as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-21 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. [Rules 69.3, 69.3.1, and 20.3(d)(1) and 40 CFR Part 60 Subpart KKKK, and 40 CFR Part 75]

Verification: CEMS data summaries shall be submitted to the CPM as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-22 [RESERVED]

AQ-23 When a combustion turbine is combusting fuel (operating), the emission concentration of oxides of nitrogen (NOx), calculated as nitrogen dioxide (NO_2), shall not exceed 2.5 parts per million by volume on a dry basis (ppmvd) corrected to 15% oxygen averaged over a 1-clock-hour average, except during commissioning, startup and shutdown periods for that turbine. [Rule 20.3(d)(1)]

Verification: The project owner shall provide CEMS emissions data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-24 When a combustion turbine is operating, the emission concentration of carbon monoxide (CO) shall not exceed 4.0 ppmvd corrected to 15 % oxygen, averaged over a 1-clock-hour period, except during commissioning, startup and shutdown periods for that turbine. [Rule 20.3(d)(1)]

Verification: The project owner shall provide CEMS emissions data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-25 When a combustion turbine is operating, the volatile organic compound (VOC) concentration, calculated as methane, measured in the exhaust stack, shall not exceed 2.0 ppmvd corrected to 15% oxygen, except during commissioning, startup and shutdown periods for that turbine. For purposes of determining compliance based on the CEMS, the district approved

VOC/CO surrogate relationship, the CO CEMS data, averaged over a 1-clock-hour period be used. The VOC/CO surrogate relationship shall be verified and/or modified, if necessary, based on source testing. [Rule 20.3(d)(1)]

Verification: The project owner shall provide the CEMS data, using the appropriate VOC/CO surrogate relationship, to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-26 When a combustion turbine is operating, the ammonia concentration (ammonia slip), shall not exceed 5.0 ppmvd corrected to 15 % oxygen, except during commissioning, startup and shutdown periods for that turbine. [Rule 1200]

Verification: The project owner shall provide the estimated ammonia concentrations and ammonia emissions based on the annual source test data, the CEMS data and SCR ammonia flow data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-27 When a combustion turbine is operating with post-combustion air pollution control equipment that controls oxides of nitrogen (NOx) emissions, the emission concentration NOx, calculated as nitrogen dioxide (NO_2), shall not exceed 13.9 ppmvd calculated over each clock-hour period and corrected to 15% oxygen, except startup and shutdown periods, as defined in Rule 69.3.1. This limit does not apply during any period in which the facility is subject to a variance from the emission limits contained in Rule 69.3.1. [Rule 69.3.1]

Verification: The project owner shall provide CEMS emissions data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-28 When a combustion turbine is operating without any post-combustion air pollution control equipment that controls oxides of nitrogen (NOx) emissions, the emission concentration of NOx calculated as nitrogen dioxide (NO_2) from each turbine shall not exceed 23.2 parts per million by volume on a dry basis (ppmvd) calculated over each clock-hour period and corrected to 15% oxygen, except for startup and shutdown periods, as defined in Rule 69.3.1. This limit does not apply during any period in which the facility is subject to a variance from the emission limits contained in Rule 69.3.1. [Rule 69.3.1]

Verification: The project owner shall provide CEMS emissions data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-29 When a combustion turbine is operating, the emission concentration of oxides of nitrogen (NOx), calculated as nitrogen dioxide (NO_2) shall not exceed 42 ppmvd calculated over each clock-hour period and corrected to 15% oxygen, on a dry basis, except during startup and shutdown periods, as defined in Rule 69.3. This limit does not apply during any period in which the facility is subject to a variance from the emission limits contained in Rule 69.3. [Rule 69.3]

Verification: The project owner shall provide CEMS emissions data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-30 For each rolling 4-unit-operating-hour period, average emission concentration of oxides of nitrogen (NOx) for each turbine calculated as nitrogen dioxide (NO_2) in parts per million by volume dry (ppmvd) corrected to 15% oxygen or, alternatively, as elected by the permittee, the average NOx emission rate in pounds per megawatt-hour (lb/MWh) shall not exceed an average emission limit calculated in accordance with 40 CFR Section 60.4380(b)(3). The emission concentration and emission rate averages shall be calculated in accordance with 40 CFR Section 60.4380(b)(1). The average emission concentration limit and emission rate limit shall be based on an average of hourly emission limits over the 4-unit-operating-hour period. The hourly emission concentration limit and emission rate limit shall be 15 ppmvd corrected to 15% oxygen and 0.43 lb/MWh, respectively at all times during the clock hour. The averages shall exclude all clock hours occurring before the Initial Emission Source Test but shall include emissions during all other times that the equipment is operating including, but not limited to, emissions during startup and shutdown periods. For each six-calendar-month period, emissions in excess of these limits and monitor downtime shall be identified in accordance with 40 CFR Sections 60.4350 and 60.4380(b)(2), except that Section 60.4350(c) shall not apply for identifying periods in excess of a NOx concentration limit. [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-SC8**).

AQ-31 The emissions of particulate matter less than or equal to 10 microns in diameter (PM10) shall not exceed 5.5 pounds per hour for each combustion turbine. [Rule 20.3(d)(2)]

Verification: Source tests demonstrating compliance with this condition shall be provided to the CPM and are due within the timeframes specified in Conditions **AQ-48** and **AQ-49**.

AQ-32 The discharge of particulate matter from the exhaust stack of each combustion turbine shall not exceed 0.10 grains per dry standard cubic foot (0.23 grams/dscm). The district may require periodic testing to verify compliance with this standard. [Rule 53]

Verification: Source tests demonstrating compliance with this condition shall be provided to the CPM and are due within the timeframes specified in Conditions **AQ-48** and **AQ-49**.

AQ-33 Visible emissions from the lube oil vents and the exhaust stack of each combustion turbine shall not exceed 20% opacity for more than three (3) minutes in any period of 60 consecutive minutes. [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-34 Mass emissions from each combustion turbine of oxides of nitrogen (NOx), calculated as NO_2; carbon monoxide (CO); and volatile organic compounds (VOC), calculated as methane, shall not exceed the following limits, except during commissioning, startup and shutdown periods for that turbine. A 1-clock-hour averaging period for these limits shall apply to CEMS data.

Pollutant	Emission Limit, lb/hour
a. NOx	8.2
b. CO	8.0
c. VOC	2.3

[Rule 20.3(d)(2)]

Verification: The project owner shall submit to the CPM operating data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-35 Excluding any minutes that are coincident with a shutdown period, cumulative mass emissions of oxides of nitrogen (NOx), calculated as NO_2; carbon monoxide (CO); and volatile organic compounds (VOC), calculated as methane, during a combustion turbine's startup period shall not exceed the following limits during any startup period, except during that turbine's commissioning period.

Pollutant	Emission Limit, lb/event
a. NOx	22.5
b. CO	17.9
c. VOC	4.7

[Rule 20.3(d)(1)]

Verification: The project owner shall submit to the CPM operating data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-36 Cumulative mass emissions of oxides of nitrogen (NOx), calculated as NO_2; carbon monoxide (CO); and volatile organic compounds (VOC), calculated as methane, during a combustion turbine's shutdown period shall not exceed the following limits during any shutdown period, except during that turbine's commissioning period.

Pollutant	Emission Limit, lb/event
a. NOx	6.0
b. CO	47.0
c. VOC	3.0

[Rule 20.3(d)(1)]

Verification: The project owner shall submit to the CPM operating data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-37 The oxides of nitrogen (NOx) emissions from each combustion turbine shall not exceed 50 pounds per hour and total aggregate NOx emissions from all combustion turbines combined shall not exceed 150 pounds per hour, calculated as nitrogen dioxide and measured over each 1-clock-hour period. These emission limits shall apply during all times one or more turbines are

operating, including, but not limited to, emissions during commissioning, startup and shutdown periods. [Rule 20.3(d)(2)]

Verification: The project owner shall provide CEMS emissions data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-38 The carbon monoxide (CO) emissions from each combustion turbine shall not exceed 75 pounds per hour and total aggregate CO emissions from all combustion turbines combined shall not exceed 225 pounds per hour measured over each 1-clock-hour period. This emission limit shall apply during all times that one or more turbines are operating, including, but not limited to emissions during commissioning, startup and shutdown periods. [Rule 20.3(d)(2)(i)]

Verification: The project owner shall provide CEMS emissions data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-39 Beginning with the earlier of the initial startup dates for any combustion turbine, aggregate emissions of oxides of nitrogen (NOx), calculated as nitrogen dioxide (NO_2); carbon monoxide (CO); volatile organic compounds (VOCs), calculated as methane; particulate matter less than or equal to 10 microns in diameter (PM10); and oxides of sulfur (SOx), calculated as sulfur dioxide (SO_2), from the combustion turbines described in district Application No. APCD2010-APP-001251, except emissions or emission units excluded from the calculation of aggregate potential to emit as specified in Rule 20.1 (d) (1), shall not exceed the following limits for each rolling 12-calendar-month period:

Pollutant	Emission Limit, tons per year
a. NOx	70.4
b. CO	96.4
c. VOC	19.4
d. PM10	35.8
e. SOx	12.4

The aggregate emissions of each pollutant shall include emissions during all times that the equipment is operating including, but not limited to, emissions during commissioning, startup and shutdown periods. [Rules 20.3(d)(3), 20.3(d)(8) and 21]

Verification: The project owner shall submit to the CPM and the district the facility annual operating and emissions data demonstrating compliance with this condition as part of the fourth quarter's Quarterly Operation Report (**AQ-SC8**).

AQ-40 The cooling tower shall be equipped with a mist eliminator designed to achieve a drift rate of 0.001% or less. Not later than 90 calendar days prior to the start of construction, the project owner shall submit to the district the final selection, design parameters and details of the mist eliminator. In addition, the maximum total dissolved solids (TDS) concentration of the water used in

the cooling tower shall not exceed 5,600 ppm. The TDS concentration shall be verified through quarterly testing of the water by a certified lab using an EPA approved method. [Rule 20.3(d)(1)]

Verification: The project owner shall submit to the CPM for review and district for approval final selection, design parameters and details of the cooling tower mist eliminator at least 90 days prior to the start of construction. The project owner shall provide cooling water testing data in compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**). The project owner shall make the site available for inspection of records by representatives of the district, ARB, and the Energy Commission.

AQ-41 For each calendar month, the project owner shall maintain records, as applicable, on a calendar monthly basis, of mass emissions during each calendar month of NOx (calculated as NO_2), CO, VOCs (calculated as methane), PM10, and SOx (calculated as SO_2), in tons, from each emission unit described in district Application No. APCD2010-APP-001251, except for emissions or emission units excluded from the calculation of aggregate potential to emit as specified in Rule 20.1 (d) (1). These records shall be made available for inspection within 15 calendar days after the end of each calendar month. [Rules 20.3(d)(3), 20.3(d)(8) and 21]

Verification: The project owner shall provide emissions summary data in compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**). The project owner shall make the site available for inspection of records by representatives of the district, ARB, and the Energy Commission.

AQ-42 For each calendar month and each rolling 12-calendar-month period, the project owner shall maintain records, as applicable, on a calendar monthly basis, of aggregate mass emissions of NOx (calculated as NO_2), CO, VOCs (calculated as methane), PM10, and SOx (calculated as SO_2) in tons for the emission units described in district Application No. APCD2010-APP-001251, except for emissions or emission units excluded from the calculation of aggregate potential to emit as specified in Rule 20.1 (d) (1). These records shall be made available for inspection within 15 calendar days after the end of each calendar month. [Rules 20.3(d)(3), 20.3(d)(8) and 21]

Verification: The project owner shall provide emissions summary data in compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**). The project owner shall make the site available for inspection of records by representatives of the district, ARB, and the Energy Commission.

Ammonia – SCR (and CO catalyst)

AQ-43 Not later than 90 calendar days prior to the start of construction, the project owner shall submit to the district the final selection, design parameters and details of the selective catalytic reduction (SCR) and oxidation catalyst emission control systems for the combustion turbines including, but not limited to, the minimum ammonia injection temperature for the SCR; the catalyst volume, 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% load. Such information may be submitted to the district as trade secret and confidential pursuant to district Rules 175 and 176. [Rules 20.3(d)(1) and 14]

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.

AQ-44 When a combustion turbine is operating, ammonia shall be injected at all times that the associated selective catalytic reduction (SCR) system outlet temperature is 575 degrees Fahrenheit or greater. [Rules 20.3(d)(1)]

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 Continuous monitors shall be installed on each 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 outlet temperature in degrees Fahrenheit for each unit operating minute. The monitors shall be installed, calibrated and maintained in accordance with a district approved protocol, which may be part of the CEMS protocol. This protocol, which shall include the calculation methodology, shall be submitted to the district 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 20.3(d)(1)]

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

AQ-46 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 personnel upon request. [Rules 20.3(d)(1)]

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

AQ-47 The concentration of ammonia solution used in the 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 personnel upon request. [Rule 14]

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.

Testing

AQ-48 All source test or other tests required by this permit shall be performed by the district or an independent contractor approved by the district. Unless otherwise specified in this permit or authorized in writing by the district, if testing will be performed by an independent contractor and witnessed by the district, a proposed test protocol shall be submitted to the district for written approval at least 60 days prior to source testing. Additionally, the district shall be notified a minimum of 30 days prior to the test so that observers may be present unless otherwise authorized in writing by the district. [Rules 20.3(d)(1) and 1200 and 40 CFR Part 60 Subpart KKKK and 40 CFR §60.8]

Verification: The project owner shall submit to the CPM for review and the district for approval the initial source test protocol at least 60 days prior to the initial source test. The project owner shall notify the CPM and district no later than 30 days prior to the proposed source test date and time.

AQ-49 Unless otherwise specified in this permit or authorized in writing by the district, within 45 days after completion of a source test or RATA performed by an independent contractor, a final test report shall be submitted to the district for review and approval. [Rules 20.3(d)(1) and 1200 and 40 CFR Part 60 Subpart KKKK, 40 CFR §60.8, and 40 CFR Part 75]

Verification: 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-50 The exhaust stacks for each combustion turbine shall be equipped with source test ports and platforms to allow for the measurement and collection of stack gas samples consistent with all approved test protocols. The ports and platforms shall be constructed in accordance with district Method 3A, Figure 2, and approved by the district. Ninety days prior to construction of the turbine stacks the project owner shall provide to the district for written approval detailed plan drawings of the turbine stacks that show the sampling ports and demonstrate compliance with the requirements of this condition. [Rule 20]

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-51 Not later than 60 calendar days after completion of the commissioning period for each combustion turbine, an Initial Emissions Source Test shall be conducted on that turbine to demonstrate compliance with the NOx, CO, VOC, PM10, and ammonia emission standards of this permit. The source test protocol shall comply with all of the following requirements:

a. Measurements of NOx and CO concentrations and emissions and oxygen (O_2) concentration shall be conducted in accordance with U.S. Environmental Protection Agency (EPA) methods 7E, 10, and 3A, respectively, and district source test Method 100, or alternative methods approved by the district and EPA.

b. Measurement of VOC emissions shall be conducted in accordance with EPA Methods 25A and/or 18, or alternative methods approved by the district and EPA.

c. Measurements of ammonia emissions shall be conducted in accordance with Bay Area Air Quality Management District Method ST-1B or an alternative method approved by the district and EPA.

d. Measurements of PM10 emissions shall be conducted in accordance with EPA Method 5 and 202 or alternative methods approved by the district and EPA. For purposes of this permit, all the particulate matter measured shall be considered to be PM10.

e. Source testing shall be performed at the normal load level, as specified in 40 CFR Part 75 Appendix A Section 6.5.2.1 (d), provided it is not less than 80% of the combustion turbine's rated load unless it is demonstrated to the satisfaction of the district that the combustion turbine cannot operate under these conditions. If the demonstration is accepted, then emissions source testing shall be performed at the highest achievable continuous power level. The district may specify additional testing at different load levels or operational conditions to ensure compliance with the emission limits of this permit and district Rules and Regulations.

f. Measurements of particulate matter emissions shall be conducted in accordance with SDAPCD Method 5 or an alternative method approved by the district and EPA.

g. Measurements of opacity shall be conducted in accordance with EPA Method 9 or an alternative method approved by the district and EPA.

h. Unless otherwise authorized in writing by the district, testing for NOx, CO, VOC, PM10, and ammonia concentrations and emissions, as applicable, shall be conducted concurrently with the NOx and CO continuous emission measurement system (CEMS) Relative Accuracy Test Audit (RATA).

[Rules 20.3(d)(1) and 1200]

Verification: The project owner shall submit to the CPM for review and the district for approval the initial source test protocol and source test report within the timeframes specified in Conditions **AQ-48** and **AQ-49**.

AQ-52 A renewal source test and a NOx and CO Relative Accuracy Test Audit (RATA) shall be periodically conducted on each combustion turbine to demonstrate compliance with the NOx, CO, VOC and ammonia emission standards of this permit and applicable relative accuracy requirements for the CEMS systems using district approved methods. The renewal 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 renewal source test shall be conducted in accordance with a protocol complying with all the applicable requirements of the source test protocol for the Initial Emissions Source Test. [Rules 69.3, 69.3.1, and 20.3(d)(1) and 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 periodic RATA and source test protocols, and RATA source test reports within the timeframes specified in Conditions **AQ-48** and **AQ-49**.

AQ-53 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 §60.4405 and on the CO CEMS in accordance with applicable provisions of 40 CFR Part 60 Appendix B and F. [Rule 21, Rule 20.3 (d)(1), 40 CFR Part 60 Subpart KKKK, and 40 CFR Part 75]

Verification: The results and field data collected during source tests required by this condition shall be submitted to the CPM for review and the district for approval as required by Condition **AQ-49**.

AQ-54 Not later than 60 calendar days after completion of the commissioning period for each combustion turbine, an initial emission source test for toxic air contaminants shall be conducted on that turbine to determine the emissions of toxic air contaminants from the combustion turbines. At a minimum the following compounds shall be tested for, and emissions, if any, quantified:

a. Acetaldehyde

b. Acrolein

c. Benzene

d. Formaldehyde

e. Toluene

f. Xylenes

This list of compounds may be adjusted by the district based on source test results to ensure compliance with district Rule 1200 is demonstrated. The district may require one or more or additional compounds to be quantified through source testing as needed to ensure compliance with Rule 1200. Within 60 calendar days after completion of a source test performed by an independent contractor, a final test report shall be submitted to the district for review and approval. [Rule 1200]

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

AQ-55 The district may require one or more of the following compounds, or additional compounds, to be quantified through source testing periodically to ensure compliance with rule 1200:

a. Acetaldehyde

b. Acrolein

c. Benzene

d. Formaldehyde

e. Toluene

f. Xylenes

If the district requires the permittee to perform this source testing, the district shall request the testing in writing a reasonable period of time prior to the testing date. [Rule 1200]

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

AQ-56 The higher heating value of the combustion turbine fuel shall be measured by ASTM D1826–94, Standard Test Method for Calorific Value of Gases in Natural Gas Range by Continuous Recording Calorimeter or ASTM D1945–96, Standard Method for Analysis of Natural Gas by Gas Chromatography or an alternative test method approved by the district and EPA. [Rules 69.3, 69.3.1, and 20.3(d)(1) and 40 CFR Part 60 Subpart KKKK, and 40 CFR Part 75]

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

AQ-57 The sulfur content of the combustion turbine fuel shall be sampled not less than once each calendar quarter in accordance with a protocol approved by the district, which shall be submitted to the district for approval not later than 90 days before the earlier of the initial startup dates for either of the three combustion turbines and measured with ASTM D1072–90 (Reapproved 1994), Standard Test Method for Total Sulfur in Fuel Gases; ASTM D3246–05, Standard Test Method for Sulfur in Petroleum Gas by Oxidative Microcoulometry; ASTM D4468–85 (Reapproved 2000), Standard Test Method for Total Sulfur in Gaseous Fuels by Hydrogenolysis and Rateometric Colorimetry; ASTM D6228–98 (Reapproved 2003), Standard Test Method for Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Flame Photometric Detection; or ASTM D6667–04, Standard Test Method for Determination of Total Volatile Sulfur in Gaseous Hydrocarbons and Liquefied Petroleum Gases by Ultraviolet Fluorescence or an alternative test method approved by the district and EPA. Sulfur content

information provided by the local serving utility may be used to satisfy this condition with the advanced written approval of the district [Rule 20.3(d)(1), Rule 21, and 40 CFR Part 75]

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

CONTINUOUS MONITORING

AQ-58 The project owner shall comply with the applicable continuous emission monitoring requirements of 40 CFR Part 75. [40 CFR Part 75]

Verification: The project owner shall maintain a copy of the CEMS protocol required by **AQ-60** on site and provide it, other CEMS data, and the CEMS for inspection on request by representatives of the district, ARB, and the Energy Commission.

AQ-59 A continuous emission monitoring system (CEMS) shall be installed on each combustion turbine and properly maintained and calibrated to measure, calculate, and record the following, in accordance with the district approved CEMS protocol:

a. Hourly average(s) 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 for each unit operating minute;

d. Hourly mass emissions of oxides of nitrogen (NOx), in pounds;

e. Cumulative mass emissions of oxides of nitrogen (NOx) in each startup and shutdown period, in pounds;

f. Daily mass emissions of oxides of nitrogen (NOx), in pounds;

g. Calendar monthly mass emissions of oxides of nitrogen (NOx), in pounds;

h. Rolling 4-unit-operating-hour average concentration of oxides of nitrogen (NOx) corrected to 15% oxygen, in parts per million (ppmvd);

i. Rolling 4-unit-operating-hour average oxides of nitrogen (NOx) emission rate, in pounds per megawatt-hour (MWh);

j. Calendar quarter, calendar year, and rolling 12-calendar-month period mass emissions of oxides of nitrogen (NOx), in tons;

k. Cumulative mass emissions of carbon monoxide (CO) in each startup and shutdown period, in pounds;

l. Hourly mass emissions of carbon monoxide (CO), in pounds;

m. Daily mass emission of carbon monoxide (CO), in pounds;

n. Calendar monthly mass emission of carbon monoxide (CO), in pounds;

o. Rolling 12-calendar-month period mass emission 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), during each unit operating minute;

q. Average emission rate in pounds per hour of oxides of nitrogen (NOx) and carbon monoxide (CO) during each unit operating minute.

[Rules 69.3, 69.3.1, and 20.3(d)(1) and 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 CEMS protocol, as required by **AQ-60**, 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-60 No later than 90 calendar days prior to initial startup of each combustion turbine, 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 district monitoring requirements. [Rules 69.3, 69.3.1, and 20.3(d)(1) and 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 CEMS operating protocol at least 90 days prior to the initial startup of each combustion turbine.

AQ-61 No later than the earlier of 90 unit operating days or 180 calendar days after each combustion turbine commences commercial operation, a Relative Accuracy Test Audit (RATA) and other required certification tests shall be performed and completed on the turbine's NOx CEMS in accordance with 40 CFR Part 75 Appendix A and on the CO CEMS in accordance with 40 CFR Part 60 Appendix B. The RATAs shall demonstrate that the NOx and CO CEMS comply with the applicable relative accuracy requirements. At least 60 calendar days prior to the test date, the project owner shall submit a test protocol to the district for written approval. Additionally, the district and U.S. EPA shall be notified a minimum of 45 calendar days prior to the test so that observers may be present. Within 45 calendar days of completion of this test, a written test report shall be submitted to the district for approval. For purposes of this condition, commences commercial operation is defined as the first instance when power is sold to the electrical grid. [Rules 69.3,

69.3.1, and 20.3(d)(1) and 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, the U.S. EPA and the 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-62 A monitoring plan in conformance with 40 CFR 75.53 shall be submitted to U.S EPA Region 9 and the district at least 45 calendar days prior to the Relative Accuracy Test Audit (RATA), as required in 40 CFR 75.62. [40 CFR Part 75]

Verification: The project owner shall submit to the CPM for review and the U.S. EPA and district for approval a monitoring plan in compliance with this condition at least 45 days prior to the RATA test.

AQ-63 The oxides of nitrogen (NOx) and oxygen (O_2) components of the CEMS shall be certified and maintained in accordance with applicable Federal Regulations including the requirements of sections 75.10 and 75.12 of title 40, Code of Federal Regulations Part 75 (40 CFR 75), the performance specifications of appendix A of 40 CFR 75, the quality assurance procedures of Appendix B of 40 CFR 75 and the CEMS protocol approved by the district. The carbon monoxide (CO) components of the CEMS shall be certified and maintained in accordance with 40 CFR 60, Appendices B and F, unless otherwise specified in this permit, and the CEMS protocol approved by the district. [Rules 69.3, 69.3.1, and 20.3(d)(1) and 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 CEMS protocol, as required by **AQ-60**, 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-64 The CEMS shall be in operation in accordance with the district approved CEMs protocol at all times when the turbine is in operation. A copy of the district approved CEMS protocol shall be maintained on site and made available to district personnel upon request. [Rules 69.3, 69.3.1, and 20.3(d)(1) and 40 CFR Part 60 Subpart KKKK, and 40 CFR Part 75]

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-65 When the CEMS is not recording data and the combustion turbine is operating, hourly NOx emissions for purposes of calendar year and 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, in writing, before the hourly emission rates are incorporated into the CEMS emission data. [Rules 20.3(d)(3) and 21 and 40 CFR Part 75]

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-SC8**).

AQ-66 Any violation of any emission standard as indicated by the CEMS shall be reported to the district's compliance division within 96 hours after such occurrence. [H&S §42706]

Verification: The project owner shall notify the district regarding any emission standard violation as required in this condition and shall document all such occurrences in each Quarterly Operation Report (**AQ-SC8**).

AQ-67 The CEMS shall be maintained and operated, and reports submitted, in accordance with the requirements of Rule 19.2 Sections (d), (e), (f) (1), (f) (2), (f) (3), (f) (4) and (f) (5), and a CEMS protocol approved by the district. [Rule 19.2]

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-68 Except for changes that are specified in the initially approved CEMS protocol or a subsequent revision to that protocol that is approved in advance, in writing, by the district, the district shall be notified in writing at least thirty (30) calendar days prior to any planned changes made in the CEMS or Data Acquisition and Handling System (DAHS), including, but not limited to, the programmable logic controller, software which affects the value of data displayed on the CEMS / DAHS monitors with respect to the parameters measured by their respective sensing devices or any planned changes to the software that controls the ammonia flow to the SCR. Unplanned or emergency changes shall be reported within 96 hours. [Rules 69.3, 69.3.1, and 20.3(d)(1) and 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 any revision to the CEMS/DAHS or ammonia flow control software, as required by this condition, to be approved in advance at least 30 days before any planned changes are made. The project owner shall notify the district regarding any unplanned emergency changes to these software systems within 96 hours and shall document all such occurrences in each Quarterly Operation Report (**AQ-SC8**).

AQ-69 At least 90 calendar days prior to the Initial Emissions Source Test, the project owner shall submit a monitoring protocol to the district for written approval which shall specify a method of determining the VOC/CO surrogate relationship that shall be used to demonstrate compliance with all VOC emission limits. This protocol can be provided as part of the Initial Source Emissions Test Protocol. [Rule 20.3(d)(1)]

Verification: The project owner shall submit to the CPM for review and the district for approval the monitoring protocol as part of the initial source test protocol in compliance with requirements of this condition at least 90 days prior to the initial source test.

AQ-70 Fuel flowmeters shall be installed and maintained to measure the fuel flow rate, corrected for temperature and pressure, to each combustion turbine. Correction factors and constants shall be maintained on site and made available to the district upon request. The fuel flowmeters shall meet the applicable quality assurance requirements of 40 CFR Part 75, Appendix D, and Section 2.1.6. [Rules 69.3, 69.3.1, and 20.3(d)(1) and 40 CFR Part 60 Subpart KKKK, and 40 CFR Part 75]

Verification: The project owner shall submit to the CPM the natural gas fuel usage data from the fuel flow meters as part of the Quarterly Operation Report (**AQ-SC8**).

AQ-71 Each combustion turbine shall be equipped with continuous monitors to measure, calculate, and record unit operating days and hours and the following operational characteristics:

a. Date and time;

b. Natural gas flow rate to the combustion turbine during each unit operating minute, in standard cubic feet per hour;

c. Total heat input to the combustion turbine based on the fuels higher heating value during each unit operating minute, in million British thermal units per hour (MMBtu/hr);

d. Higher heating value 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 electrical energy output during each unit operating minute in gross megawatts hours (MWh);

The values of these operational characteristics shall be recorded each unit operating minute. 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, 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 upon request. [Rules 69.3, 69.3.1, and 20.3(d)(1) and 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 and within the timeframes specified in **AQ-72**. 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-72 At least 90 calendar days prior to initial startup of the each combustion turbine, the project owner shall submit a turbine monitoring protocol to the district for written approval. This may be part of the CEMS protocol. [Rules 69.3, 69.3.1, and 20.3(d)(1) and 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 monitoring protocol in compliance with this condition at least 90 days prior to the initial startup of each combustion turbine.

AQ-73 Operating logs or Data Acquisition and Handling System (DAHS) records shall be maintained to record the beginning and end times and durations of all startups, shutdowns, and tuning periods to the nearest minute, quantity of fuel used in each clock hour, calendar month, and 12-calendar-month period in standard cubic feet; hours of operation each day; and hours of operation during each calendar year. For purposes of this condition, the term “hours of turbine operation” is defined as the total minutes the turbine is combusting fuel during the calendar year divided by 60. [Rules 69.3, 69.3.1, and 20.3(d)(1) and 40 CFR Part 60 Subpart KKKK, and 40 CFR Part 75]

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

COMMISSIONING

AQ-74 Before the end of the commissioning period for each combustion turbine, the project owner shall install post-combustion air pollution control equipment on that turbine to minimize NOx and CO emissions. Once installed, the post-combustion air pollution control equipment shall be maintained in good condition and shall be in full operation at all times when the turbine is combusting fuel and the air pollution control equipment is at or above its minimum operating temperature. [Rule 20.3(d)(1)]

Verification: The project owner shall provide the CPM and district records demonstrating compliance with this condition as part of the monthly commissioning status report (**AQ-75**).

AQ-75 Thirty calendar days after the end of the commissioning period for each combustion turbine, the project owner shall submit a written progress report to the district. This report shall include, at 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 turbine 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 for each minute and, except for cumulative mass emissions, averaged over each hour of operation:

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 (O_2) in the exhaust gas;

d. Mass emissions of oxides of nitrogen (NOx), in pounds;

e. Cumulative mass emissions of oxides of nitrogen (NOx) in each startup and shutdown period, in pounds;

f. Cumulative mass emissions of carbon monoxide (CO) in each startup and shutdown period, in pounds

g. Mass emissions of carbon monoxide (CO), in pounds;

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 of the fuel on an hourly basis, in million British thermal units per standard cubic foot (MMBtu/scf);

j. Gross electrical power output of the turbine, in megawatts hours (MWh) for each hour;

k. SCR outlet temperature, in degrees Fahrenheit; and

l. Stack exhaust gas temperature, in degrees Fahrenheit.

The hourly average information shall be submitted in writing and in an electronic format approved by the district. The minute-by-minute information shall be submitted in an electronic format approved by the district. [Rules 69.3, 69.3.1, 20.3(d)(1)and 20.3(d)(2)]

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 days 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-76 For each combustion turbine, the project owner shall submit the following notifications to the district and U. S. EPA, Region IX:

a. A notification in accordance with 40 CFR Section 60.7(a)(1) delivered or postmarked not later than 30 calendar days after construction has commenced;

b. A notification in accordance with 40 CFR Section 60.7(a)(3) delivered or postmarked within 15 calendar days after initial startup; and

c. An Initial Notification in accordance with 40 CFR Section 63.6145(c) and 40 CFR Section 63.9(b)(2) submitted no later than 120 calendar days after the initial startup of the turbine.

In addition, the project owner shall notify the district when: (1) construction is complete by submitting a Construction Completion Notice before operating any unit that is the subject of this permit, (2) each combustion turbine first combusts fuel by submitting a First Fuel Fire Notice within five calendar days of the initial operation of the unit, and (3) each combustion turbine first generates electrical power that is sold by providing written notice within 5 days of this event. [Rules 24 and 21 and 40 CFR Part 75, 40 CFR Part 60 Subpart KKKK, 40 CFR Part §60.7, 40 CFR Part 63 Subpart YYYY, and 40 CFR Part §63.9]

Verification: The project owner shall provide notification to the district and U.S. EPA Region IX as required by this condition and shall provide copies of these notifications as part of the final monthly commissioning status reports (**AQ-75**) due the month after the notifications are sent.

REPORTING

AQ-77 The permittee shall file semiannual reports in accordance with 40 CFR §60.4375. [40 CFR Part 60 Subpart KKKK]

Verification: Semiannual compliance reports shall be submitted to the district and the CPM as part of the second quarter's and fourth quarter's Quarterly Operation Reports (**AQ-SC8**).

AQ-78 Each semiannual report must cover the semiannual reporting period from January 1 through June 30 or the semiannual reporting period from July 1 through December 31. Each such semiannual compliance report shall be postmarked or delivered no later than January 30 or July 30, whichever date

is the first date following the end of the semiannual reporting period. [40 CFR Part 60 Subpart KKKK and Rule 21]

Verification: Semiannual compliance reports shall be submitted to the district and the CPM as part of the second quarter's and fourth quarter's Quarterly Operation Reports (**AQ-SC8**).

AQ-79 All semiannual compliance reports shall be submitted to the district Compliance Division [40 CFR §60.7]

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

REFERENCES

ARB 2011a - California Air Resources Board. Air Designation Maps available on ARB website. http://www.arb.ca.gov/desig/adm/adm.htm. Accessed 2011.

ARB 2011b - California Air Resources Board. California Ambient Air Quality Data Statistics available on CARB website. http://www.arb.ca.gov/adam/welcome.html. Accessed 2011.

EPA 2011b – Environmental Protection Agency. The Green Book Nonattainment Areas for Criteria Pollutants. http://www.epa.gov/oar/oaqps/greenbk/index.html. Accessed 2011.

EPA 2011c – Environmental Protection Agency. AirData database ambient air quality data. http://www.epa.gov/aqspubl1/annual_summary.html. Accessed 2011.

PPEC 2011a – Pio Pico Energy Center, LLC / G. Chandler (tn 59646). Application for Certification Volume 1 & 2, dated February 9, 2011. Submitted to CEC/Docket Unit on February 9, 2011.

PPEC 2011c – Pio Pico Energy Center, LLC / K. Hellwig (tn 59939). Pio Pico Energy Center, LLC Supplemental Air Quality Modeling and Risk Assessment, dated March 8, 2011. Submitted to CEC/Docket Unit on March 8, 2011.

PPEC 2011k – Pio Pico Energy Center, LLC / M. Foster (tn 61384). Applicant's Responses to Commission Staff Data Request Set 1 (#1-59), dated July 15, 2011. Submitted to CEC/Docket Unit on July 15, 2011.

PPEC 2011x – Pio Pico Energy Center, LLC / M. Foster (tn 61927). (tn 61927) Applicant's Responses to Staff's Data Requests Set 2 (60-71), dated August 17, 2011 Submitted to CEC/Docket Unit on August 17, 2011.

SDAPCD 2011a – San Diego Air Pollution Control District. Preliminary Determination of Compliance, Pio Pico Energy Center, dated December 16, 2011.

WRCC 2011a - Western Regional Climate Center. Desert Research Institute. Climate Data Summary for Bonita. http://www.wrcc.dri.edu/Climsum.html Accessed 2011.

AIR QUALITY APPENDIX AIR-1

Greenhouse Gas Emissions
Tao Jiang, Ph.D., P.E and David Vidaver

SUMMARY

The Pio Pico Energy Center (PPEC) project is a proposed addition to the state's electricity system. It would be an efficient, new, dispatchable natural gas-fired simple cycle power plant that 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 generation and facilitate the integration of renewable resources. Because the project will improve the efficiency of existing system resources, the addition of PPEC would contribute to a reduction of the California GHG emissions and GHG emission rate average. The relative efficiency of the PPEC project 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. Electricity is produced by operation of an inter-connected system of generation sources. Operation of one power plant, like the PPEC project, affects all other power plants in the interconnected system.

While the Pio Pico Energy Center (PPEC) burns natural gas for fuel and thus produces GHG emissions that contribute cumulatively to climate change, it will have a beneficial impact on system operation and facilitate a reduction in GHG emissions in several ways:

- When dispatched,[1] the PPEC 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 power plants that the project would displace, the addition of the PPEC would contribute to a reduction of California and overall Western Electricity Coordinating Council system GHG[2] emissions and GHG emission rate average.
- The PPEC would provide dispatchable, flexible peaking power necessary to integrate the large amounts of intermittent renewable generation (also known as "variable energy resources") expected to meet the state's renewable portfolio standard (RPS) and GHG emission reduction targets
- The PPEC would replace peaking generation mostly provided by aging, high GHG emitting power plants, some of which that are likely to retire in order to comply with the State Water Resource Control Board's (SWRCB) policy on the use of once through cooling (OTC).

[1] 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.

[2] 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.

- The PPEC would replace less efficient generation in the San Diego local reliability area required to meet local reliability needs, reducing the GHG emissions associated with providing local reliability services and facilitating the retirement of aging, high GHG-emitting resources in the area.
- The PPEC project would facilitate to some degree the replacement of high GHG emitting (e.g., out-of-state coal) electricity generation that must be phased out to meet the State's new Emissions Performance Standard implemented by SB 1368.

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 believes that the project would result in a cumulative overall reduction in GHG emissions from the state's power plants, would not worsen current conditions, and would thus not result in impacts that are cumulatively significant. In addition, it would provide flexible, dispatchable and fast ramping power, which is an important backup in a high-renewables, low-GHG system.

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

Staff does not believe that the minor GHG emission increases from construction activities would be significant for several reasons. First, construction emissions would be short-term 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 meet the latest emissions standards, would further minimize greenhouse gas emissions. Staff believes that the use of newer equipment will increase efficiency and reduce GHG emissions and be compatible with low-carbon fuel (e.g., bio-diesel and ethanol) mandates that will likely be part of the ARB regulations to reduce GHG from construction vehicles and equipment. For all these reasons, staff concludes that the minor short-term emission of greenhouse gases during construction would be sufficiently reduced and would, therefore, not be significant.

Although the PPEC is not subject to the Greenhouse Gases Emission Performance Standard (Title 20, California Code of Regulations, section 2900 et seq.) because it is not a base load power plant, the project would meet the standard with a rating of 0.477 metric tonnes CO_2 -equivalent per megawatt-hour.

The PPEC project 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 systemwide GHG emissions).

Air Quality GHG Analysis (Tao Jiang)

INTRODUCTION

GHG emissions are not criteria pollutants; 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. Regulating GHGs at the federal level is required by Prevention of Significant Deterioration Program (PSD) for sources that exceed 100,000 tons per year of carbon dioxide-equivalent emissions.

Federal rules that became effective December 29, 2009 (40 CFR 98) require federal reporting of GHGs. 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. The State has demonstrated a clear willingness to address global climate change though research, adaptation[3], 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 carbon dioxide, 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 or reused or recycled, but are nevertheless documented here as some of the compounds have very high relative global warming potentials.

Global warming potential is a relative measure, compared to carbon dioxide, of a compound's residence time in the atmosphere and ability to warm the planet. Mass emissions of GHGs are converted into carbon dioxide equivalent (CO2E) metric tonnes (MT) for ease of comparison.

[3] 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.

GLOBAL CLIMATE CHANGE PROGRAM

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

Greenhouse Gas Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
Federal	
40 Code of Federal Regulations (CFR) Parts 51, 52, 70 and 71	This rule "tailors" GHG emissions to PSD and Title V permitting applicability criteria.
40 Code of Federal Regulations (CFR) Parts 51 and 52	A new stationary source that emits more than 100,000 TPY of greenhouse gases (GHGs) is also considered to be a major stationary source subject to Prevention of Significant Determination (PSD) requirements.
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.
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 that will reduce GHG emission to 1990 levels by 2020. Electricity production facilities will be regulated by the ARB. A cap-and-trade program is being developed to achieve approximately 20 percent of the GHG reductions expected 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).

In 1998, the Energy Commission identified a range of strategies to prepare for an uncertain climate future, including a need to account for the environmental impacts associated with energy production, planning, and procurement (CEC 1998, p.5). In 2003, the Energy Commission recommended that the state require reporting of

greenhouse gases or global climate change[4] emissions as a condition of state licensing of new electric generating facilities (CEC 2003, IEPR p. 42). In 2006, California enacted the California Global Warming Solutions Act of 2006 (AB 32). It requires the California Air Resources Board (ARB) to adopt standards that will reduce statewide GHG emissions to statewide GHG emissions levels in 1990, with such reductions to be achieved by 2020. To achieve this, ARB has a mandate to define the 1990 emissions level and achieve the maximum technologically feasible and cost-effective GHG emission reductions.

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

Examples of strategies that the state might pursue for reducing GHG emissions in California, in addition to those recommended by the Energy Commission and the Public Utilities Commission, were identified in the California Climate Action Team's Report to the Governor (CalEPA 2006). The scoping plan approved by ARB in December 2008 builds upon the overall climate change policies of the Climate Action Team report and shows the recommended strategies to achieve the goals for 2020 and beyond. Some strategies focus on reducing consumption of petroleum across all areas of the California economy. Improvements in transportation energy efficiency (fuel economy) and land use planning and alternatives to petroleum-based fuels are slated to provide substantial reductions by 2020 (CalEPA 2006). The scoping plan includes a 33% Renewables Portfolio Standard (RPS), aggressive energy efficiency targets, and a cap-and-trade system that includes the electricity sector (ARB 2008). Mandatory compliance with cap-and-trade requirements commenced on January 1, 2012, although enforcement has been delayed until 2013. Senate Bill 2 (Simitian, Chapter 1, Statutes of 2011-12) expresses the intent to have 33 percent of California's electricity supplies by renewable sources by 2020.The scoping plan also includes a strategy to greatly expand use of combined heat and power (cogeneration) facilities.

It is possible that GHG reductions mandated by ARB will be non-uniform or disproportional across emitting sectors, in that most reductions will be based on cost-effectiveness (i.e., the greatest effect for the least cost). For example, the ARB proposes a 40 percent reduction in GHG from the electricity sector, even though that sector currently only produces about 25 percent of the state's GHG emissions. In response, in September 2008 the Energy Commission and the Public Utilities

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

Commission provided recommendations (CPUC 2008) to ARB on how to achieve such reductions through both programmatic and regulatory approaches and identified regulation points should ARB decide that a multi-sector cap and trade system is warranted.

SB 1368,[5] enacted in 2006, and regulations adopted by the Energy Commission and the Public Utilities Commission pursuant to the bill, prohibits California utilities from entering into long-term commitments with any base load facilities that exceed the Emission Performance Standard (EPS) of 0.500 metric tonnes CO_2 per megawatt-hour[6] (1,100 pounds CO_2/MWh). Specifically, the SB 1368 Emission Performance Standard (EPS) applies to base load power from new power plants, new investments in existing power plants, and new or renewed contracts with terms of five years or more, including contracts with power plants located outside of California.[7] If a project, instate or out of state, plans to sell base load electricity 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 [20 CCR §2093(a)]. At the January 12, 2012 Business Meeting, the Energy Commission opened an Order Instituting Rulemaking (12-OIR-1) to consider revisions to the EPS.

In addition to these programs, California is involved in the Western Climate Initiative, a multi-state and international effort to establish a cap-and-trade market to reduce greenhouse gas emissions in the Western United States and the Western Electricity Coordinating Council (WECC). The timelines for the implementation of this program are similar to those of AB 32, with full roll-out beginning in 2012. And as with AB 32, the electricity sector has been a major focus of attention.

PPEC would be required to participate in California's greenhouse gas cap-and-trade program once the program begins to operate. This cap-and-trade program is part of a broad effort by the State of California to reduce GHG emissions as required by AB32, which is being implemented by the Air Resources Board (ARB). As currently proposed, market participants such as PPEC will 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 AB32 program. As new participants enter the market, and 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, PPEC as a GHG cap and trade participant would be consistent with California's landmark AB 32 Program, which is intended to reduce California's GHG emissions down to 1990 levels by 2020.

[5] Public Utilities Code § 8340 et seq.
[6] The Emission Performance Standard only applies to carbon dioxide and does not include emissions of other greenhouse gases converted to carbon dioxide equivalent.
[7] See Rule at http://www.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/64072.htm

Project Construction

Construction of industrial facilities such as power plants requires coordination of numerous equipment and personnel. The concentrated on-site activities result in short-term, unavoidable increases in vehicle and equipment emissions that include greenhouse gases. Construction of the PPEC project would involve 16 months of activity (not including start-up or commissioning). The project owner provided a GHG emission estimate for the entirety of the construction phase. The GHG emissions estimate, presented below in **Greenhouse Gas Table 2**, includes the total emissions for the 16 months of construction activity in terms of CO_2-equivalent.

Greenhouse Gas Table 2
PPEC, Estimated Potential Construction Greenhouse Gas Emissions (16 months)

Construction Source	Fuel	Construction-Phase GHG Emissions (Metric Tons)			
		CO_2	CH_4	N_2O	CO_2eq
Off-road Fuel Use	Diesel	636	2.61E-02	5.22E-03	
Worker Travel	Gasoline	307	1.30E-02	2.60E-03	
Truck Deliveries	Diesel	81	3.34E-03	6.68E-04	
Construction Total		**1,023**	**4.24E-02**	**5.49E-03**	**1,026**

Source: Table 5.2-24 and Table G-2.6 (PPEC 2011x)

Project Operations

The proposed PPEC would be a nominal 300-megawatt (MW) simple-cycle electrical generating facility located in an industrial area of San Diego County, adjacent to the existing Otay Mesa Generating Project. The generating facility would consist of three General Electric (GE) LMS100 natural gas-fired turbine generators and associated equipment. The primary sources of GHG would be the natural gas fired combustion turbines. 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 what the proposed project, as permitted, could potentially emit in greenhouse gases on an annual basis. All emissions are converted to CO_2-equivalent and totaled. Electricity generation GHG emissions are generally dominated by CO_2 emissions from the carbon-based fuels; other sources of GHG are typically small and also are more likely to be easily controlled or reused/recycled, but are nevertheless documented here as some of the compounds have very high relative global warming potentials.

The proposed project would be permitted, on an annual basis, to emit approximately 621,000 metric tonnes of CO_2 per year if operated at its maximum permitted level. The CO_2 emissions result from a project capacity factor of 46 percent, well below the trigger for the SB1368 Emission Performance Standard of 60 percent capacity factor. Regardless, the new PPEC facility would emit at 0.477 MTCO2/MWh, which could meet the SB1368 Greenhouse Gas Emission Performance Standard of 0.500 MTCO2/MWh, if it applied.

Greenhouse Gas Table 3
PPEC, Estimated Potential Greenhouse Gas (GHG) Emissions

Emissions Source (All CTGs operating at 46% capacity factor)	Operational GHG Emissions (MTCO2E/yr) [a]
CTGs CO_2	621,000
CTGs CH_4	222
CTGs N_2O	364
CTGs SF_6	<1
Total Project GHG Emissions (MTCO2E/yr)	**621,500**
Estimated Annual Energy Output (MWh/yr) [b]	1,301,000
Estimated Annualized GHG Performance ($MTCO_2$/MWh)	**0.477**

Sources: Table 5.2.23 and Table G-3.7 (PPEC 2011a)
Notes: a. One metric tonne (MT) equals 1.1 short tons or 2,204.6 pounds or 1,000 kilograms.
b. Annualized basis uses the project owner's assumed maximum permitted operating basis.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Staff assesses the cumulative effects of GHG emissions caused by both construction and operation. As the name implies, construction impacts result from the emissions occurring during the construction of the project. The operation impacts result from the emissions of the proposed project during operation. Staff is continuing to monitor development of AB 32 Scoping Plan implementation efforts and general trends and developments affecting GHG regulation in the construction and electricity sectors.

Construction Impacts

Staff believes that the small GHG emission increases from construction activities would not be significant for several reasons. First, the period of construction will be short-term and the emissions intermittent during that period, not ongoing during the life of the project. Additionally, control measures that staff recommends to address criteria pollutant 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 will likely 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.

CUMUMATIVE IMPACTS

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

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

COMPLIANCE WITH LORS

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

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

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

Reporting of GHG emissions would enable the project to demonstrate consistency with the policies described above and the regulations that ARB adopts and to provide the information to demonstrate compliance with any future AB 32 requirements that could be enacted in the next few years. Since this power project would be permitted for less than a 60 percent annual capacity factor, the project is not subject to the requirements of SB 1368 and the current Emission Performance Standard. However, the PPEC's GHG emission performance has been shown to be below the SB 1368 EPS.

Project Impacts on Electricity System (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 their inherent GHG emissions will still be integral to the reliable operation of the electricity system for a significant share, if not all of this period. The amount of new 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 ten-year planning horizon is determined in the California Public Utilities Commission's (CPUC) 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 preferred resources (zero- and low-GHG emitting resources) in support of the state's climate change policies before authorizing the development/financing of conventional fossil resources.

THE ROLE OF GAS-FIRED GENERATION IN A LOW-GHG ENVIRONMENT

The need for 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). A report prepared as a response to the GHG OII (CEC 2009a) defines five roles that gas-fired power plants fulfill in a high-renewables, low-GHG system (CEC 2009b, pp 93 and 94):

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

Intermittent Generation 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; meeting GHG emission reduction targets for 2050 will likely require a far higher percentage. Much of this energy will come from wind and solar resources to be developed in California.

The California Independent System Operator (CAISO) has identified an increased need for regulation and "load-following" generation as a result of the increase in these intermittent ("variable energy") renewable resources; as the output of the latter can change randomly in response to changes in wind speed, irradiance, etc.[8] Dispatchable capacity must provide "regulation," small changes in output at CAISO direction, requiring that the generator be equipped with automated generation control (AGC). "Load following" entails larger changes in output, requiring that units be increasingly economically dispatched at CAISO direction over wider ranges. This requires dispatchable generation that can start quickly when called upon to operate, 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 fossil resources is to be minimized. Gas-fired power plants are currently the only incremental resource that can provide regulation and load following in large quantities while providing other reliability services needed by the system. While dispatchable hydroelectric plants can do so, the potential for adding hydroelectric resources to the system is limited, nor can these resources be easily be developed in local reliability areas. Nuclear and coal facilities are designed to operate at full output; they are neither suited economically or from an engineering standpoint to cycle up and down. While storage may ultimately provide significant quantities of regulation and load-following, only pumped hydro storage facilities are currently capable of doing so on a large scale; but such resources cannot be developed in large quantities in locations that simultaneously meet local reliability needs.

Local Capacity Requirements

The California ISO has identified numerous "local capacity areas (LCA)" and sub-areas in which threshold amounts of 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 capacity be generating or be available to the 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 Council (NERC). The amount of capacity needed in each of these areas (the local capacity requirement, or "LCR") is determined annually by the ISO; the LCR study process culminates in an annual *Local Capacity Technical Analysis*.

The need for natural-gas fired capacity in LCAs stems in part from their predominantly urban nature and coastal location. The LCRs of the Greater Bay Area, Los Angeles basin, San Diego and Big Creek – Ventura LRAs are too large to be met solely with non gas fired generation; the renewable development scenarios compiled by the CPUC for use in the 2010 LTPP proceeding indicate that only a small share of the capacity embodied in new renewable resources can be expected to reside in the large LCAs.

[8] Studies are available at http://www.caiso.com/informed/Pages/StakeholderProcesses/IntegrationRenewableResources.aspx

Grid Operations Support

System reliability requires that a share of the generation capacity be dispatchable and sufficiently flexible so as to allow aggregate output to change as rapidly as needed due to changes in demand conditions and the output of intermittent generation. Central station renewable generating technologies and customer-side-of-the-meter distributed generation not only do not possess the ability to ramp up and down or respond to dispatch instructions, but increase the amount of flexibility that the remainder of the generation fleet must have. While storage and demand response will provide an increasing share of this flexibility over time, gas-fired plants are currently the primary source of the ancillary services and voltage support that the California ISO needs to provide reliable service. New gas-fired plants are an increasingly necessary source of these services as more than 12,000 MW of aging gas-fired generation historically relied upon to provide them are likely to retire as a result of the state's policy requiring phase-out of once-through cooling (OTC).

Extreme Load and System Emergencies Support

Natural gas-fired peaking plants fulfill the role of meeting peak demand and frequently provide black start capability, enabling them to provide the power necessary for other generating plants to restart following a widespread outage. While nuclear and hydro plants and renewable and other preferred resources can and do provide a share of the capacity – both system-wide and locally – needed to ensure reliability, natural gas-fired generation is needed to meet capacity needs during peak hours.

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. In addition, much of the state's existing generation fleet will likely need to shut down to comply with the State Water Resource Control Board's (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 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 IOU service territories is determined in the CPUC's biennial LTPP proceeding. This proceeding is the forum in which the state's major IOUs are authorized to finance the development of the 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. 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) its location, if required for local reliability, is a function of planning assumptions that reflect the state's commitment to dramatically reducing GHG emissions from the electricity sector The MW 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[9] capacity in excess of peak demand) needed to ensure system reliability, normally assumed to be 15 percent - 17 percent of peak demand, but also including any additional dispatchable capacity needed to ensure reliability given variation in the output of intermittent renewable resources (wind, solar generation)
- Capacity to be provided by new renewable resources built/contracted with to meet the state's Renewable Portfolio Standard (RPS)
- Capacity to be lost due to retirement, e.g., capacity expected to cease operation as a result of the State Water Resource Control Board's policy regarding the use of OTC.

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,[10] as well as targets for the development of specific types of preferred resources, including energy efficiency, demand response, and renewable generation. In other words, in authorizing the procurement/financing of dispatchable, gas fired capacity by an IOU, the CPUC has:

- assumed that requirements/targets for preferred resources will be met, and
- found that the services required from needed capacity cannot be provided by (additional) preferred resources, or cannot be provided by them in a least-cost, best-fit manner.[11]

The SDG&E 2009 RFO was a response to the CPUC's December 2007 authorization to finance new dispatchable capacity in the San Diego LCA[12] capable of providing local capacity and facilitating the integration of intermittent renewable resources (i.e., with

[9] The amount of capacity assumed by regulators/planning entities to be "reliably available" from a generation resource during peak hours; this may be less than the nameplate capacity of the resource.
[10] The "loading order" calls for development of energy efficiency and demand response programs, renewable resources, and combined heat and power prior to the development of conventional fossil resources in order to meet California's energy needs.
[11] The (in)ability of generation projects to provide needed services on a least-cost, best-fit basis is determined through the RFO process that follows authorization, in which the IOUs solicit bids *cum* new projects to provide services. The costs of provision include estimated GHG emissions costs, as GHG allowance costs are included in the evaluation of fossil resources.
[12] D.07-12-052, December 20, 2007.

quick-start capability and able to adjust output quickly over a wide range of MWs). In submitting an application to the CPUC to enter into a power purchase agreement (PPA) with the PPEC, SDG&E is asserting that the PPEC is a least-cost, best fit provider of the capacity and ancillary services sought in the RFO. This application is still under review at the CPUC as discussed below.

The application SDG&E filed at the CPUC to enter into a long-term power purchase agreement (PPA) with the PPEC[13] has met with objections from several parties. These objections, based on claims that the procurement of local capacity authorized by the CPUC is no longer needed and/or that the next procurement cycle will or may yield lower-cost, better fit offers, will receive hearing during 2012 and be informed by a recent CA ISO study.[14] If the CPUC concludes that the PPEC is a least-cost best fit provider of the capacity and ancillary services needed to reliably meet load and do so in a fashion consistent with the state's environmental goals, one would expect the contract to be approved. Should SDG&E's application to the CPUC be rejected, it is all but certain that the PPEC will not be built[15] even if the facility is approved by the Energy Commission. However, if it is built and comes on line without CPUC approval of the PPA, it would: (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 will be unaffected).

The CPUC does not require Energy Commission certification for a generation project to participate in a utility RFO, nor does the Energy Commission require a power purchase agreement (PPA) with an IOU for a project to be considered for certification. 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. This could lead to non-competitive solicitations, unnecessarily raising ratepayer costs without any environmental benefit. Energy Commission certification of fossil generation without a long-term PPA does not result in the development of more fossil generation than that needed to reliably operate the system; only one merchant plant has been developed since the Energy Crisis without a PPA. This project, in turn, provides capacity and ancillary services that obviates the need for the same from other, new gas-fired generation and contributes to OTC retirements.

ENERGY DISPLACEMENT AND CHANGES IN GHG EMISSIONS

Any assessment of the impact of the PPEC 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 a new generation resource simultaneously displaces exactly the same amount of energy from another resource or resources. The GHG emissions produced by the PPEC are thus not incremental, but are partially or totally

[13] A.11-05-023

[14] 2011/2012 Transmission Planning Process Stakeholder Meeting Policy-Driven & Economic Study Preliminary Results, See http://www.caiso.com/Documents/Presentation%20-%2020112012_TransmissionPlanningProcessDec8_2011.pdf

[15] Only one merchant facility (Inland Empire) has been constructed in California since 2003 without a long-term power purchase agreement.

offset by reductions in emissions from those less efficient generation resources that are displaced. As shall be demonstrated, bringing a new natural gas-fired plant on line, holding the remainder of the portfolio of available generation resources in the Western U.S. constant,[16] unambiguously reduces GHG emissions.

As electricity generated (or released from storage) must equal energy consumed at every moment in time, the energy produced by the PPEC must be offset by equivalent reductions in generation elsewhere in the system.[17] It is reasonable to assume that the PPEC will be dispatched (called upon to generate electricity) whenever it is a cheaper source of energy than an 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.[18]

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% or more).[19] It follows that the PPEC will 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:

- 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 PPEC's variable O&M costs are unusually low and that it 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 emission) but still be dispatched first. Natural gas costs in California, however, and in San Diego in particular, are higher than elsewhere in the WECC.

The dispatch of the PPEC will not result in the displacement of energy from renewable resources or large hydro. Most renewable resources have must-take contracts with utilities; the latter must purchase all the energy produced by these renewable generators. 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 the PPEC (e.g., fuel costs for wind, solar, other renewable generation technologies, and large hydro are zero or minimal); these resources can bid into spot markets for energy far below the PPEC

[16] The California electricity system is part of the integrated Western Electricity Coordinating Council, which includes all or part of eleven states and two Canadian provinces (British Columbia and Alberta). Electricity consumed in California can be generated anywhere in this area.

[17] A new generation resource producing for on-site consumption may displace 7 percent - 8 percent more energy than it generates as transmission losses are reduced or eliminated. This does not affect the conclusions drawn herein.

[18] This assumption is embedded in simulation models that mimic the dispatch of the power plants that make up the WECC, as well as the (largely spreadsheet-based) models utilities and other owners of portfolios of generation assets use to make commitment and dispatch decisions. Accordingly, any competent computer modeling of the impact of the development/dispatch of a new gas-fired power plant will yield the conclusions reached here.

[19] Other, "fixed" costs are irrelevant to the dispatch decision, as they are incurred whether or not the power plant is generating electricity.

and other natural gas-fired generators. Nor would the PPEC displace energy from (zero-GHG emission) nuclear generation facilities, as these resources have far lower variable operating costs as well.[20] 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 the PPEC will facilitate the retirement of less efficient generation resources. By reducing revenue streams accruing to other resources (for the provision of both energy and capacity-related services), the PPEC renders them less profitable both directly through energy and ancillary services markets and indirectly through contracts to provide capacity to ensure resource adequacy. This follows from the fixed demand for energy and ancillary services; the developers of the PPEC cannot stimulate demand for energy and other products provided by the facility, but merely serve to provide a share of the amount that is needed to meet demand and reliably operate the system. In doing so, the PPEC both encourages and allows for the retirement of less efficient generation.

The long-run impact of fleet turnover can be seen from historical changes in the GHG emissions per unit of gas-fired generation in California. In 2001, more than 60 percent of gas-fired generation in California was from pre-1980 steam turbines, consuming just over 10,000 Btu per kWh. By 2010, this share had fallen to 5 percent; 6 percent of gas-fired generation was from new combined cycles with a heat rate of 7,170 Btu per kWh (CEC 2011). The output and GHG emissions of new gas-fired plants are not incremental to the system; they displace those from older plants.

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 gas plants are not necessarily dispatched before less efficient ones. While this would seem to contradict 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 moved from 0 to 50 MW and back again 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 in order to be available the next day and/or cannot operate at 30 MW (without a marked degradation in efficiency, and thus increases in GHG emissions).

While the PPEC is less efficient than, for example, a new combined cycle, and thus produces more GHG emissions per MWh at full load, it is far more flexible and will be as or more efficient a provider of reliability services. Able to start up more rapidly and shut

[20] Energy from the PPEC and other new natural gas-fired generation would not displace energy from coal-fired generation facilities. The price of a Btu of energy from coal is sufficiently lower than that from natural gas to more than offset the lower efficiency with which a Btu of energy from coal is converted to electricity. In other words, fuel costs per MWh are lower for coal plants than for natural gas plants. Nearly all coal-based capacity used to provide electricity to California is produced out-of-state and all will be phased out over time by the Environmental Performance Standard developed as a result of SB 1368 (Perata, Statutes of 206, Chapter 3).

down several times a day, it will operate fewer hours to provide the same services. Able to rapidly move over a range of 30 to 300 MW, it will be able to operate at lower levels of output when desirable.

FLEXIBLE, DISPATCHABLE GAS-FIRED GENERATION AND THE INTEGRATION OF INTERMITTENT RENEWABLE RESOURCES

The PPEC meets the criteria for an efficient dispatchable resource that facilitates the integration of intermittent renewable generation. The LMS 100 proposed for PPEC is capable of coming on line and reaching full load (100 MW) in less than 10 minutes. This allows the PPEC to operate over a 300-MW range within minutes, effectively providing substantial load-following services in support of combined changes in load and output from intermittent resources as demand, wind speeds, and solar irradiance changes. Its rapid start up time and ability to cycle on and off allows it to provide load-following services without needing to be kept on line overnight producing both energy and GHG emissions hours before its energy and capacity is actually needed.

RETIREMENT OF GENERATION USING ONCE-THROUGH-COOLING AND DIVESTITURE OF HIGH GHG-EMISSION PLANTS

New resources like the PPEC will be required to provide generation capacity in the likely event that a majority of facilities utilizing once-through cooling (OTC) are retired. The SWRCB policy on OTC will require the retrofit, retirement, or significant curtailment of 12,319 MW of gas-fired capacity by the end of 2020.[21] The following table lists the facilities in the CAISO control area that utilize OTC and the dates by which they must comply with the SWRCB policy.

While some OTC facilities owned and operated by utilities and recently-built combined cycles may well install dry or wet cooling towers or add expensive underwater hardware to comply with OTC requirements, it is unlikely that the aging merchant plant owners will find it economic to do so. Most of these units operate at low capacity factors, suggesting a limited ability to compete in the current electricity market. Although the timing would be uncertain, new resources would out-compete aging plants and would displace the energy provided by OTC facilities and likely accelerate their retirements.

The state's Emissions Performance Standard (EPS), established in 2007, precludes continued investment by the California utilities in coal-fired generation. As a result, more than 18,000 GWh of energy from such resources will have to be replaced by 2020.

[21] The policy allows for delays in compliance if doing so threatens system reliability. For example, if compliance were to require a temporary shutdown or retirement of a unit/facility and replacement capacity determined to be needed for reliability were not (yet) online, the SWRCB would allow a postponement of the compliance deadline established under the policy.

Greenhouse Gas Table 3
Once-Through Cooled Units with Compliance Deadlines in or Before 2020

Units	Compliance Date (year-end)	MW
El Segundo 3-4	2015	670
Morro Bay 3-4	2015	650
Contra Costa 6-7	2017	674
Encina 1-5	2017	950
Moss Landing 1-2, 6-7	2017	2,530
Pittsburg 5-6	2017	629
Alamitos 1-6	2020	2,010
Huntington Beach 1-4	2020	904
Mandalay 1-2	2020	430
Ormond Beach 1-2	2020	1,516
Redondo Beach 5-8	2020	1,356
Total		**12,319**

Source: SWRCB, Energy Commission staff

Greenhouse Gas Table 4
Expiring Long-Term Contracts/Entitlements with Coal-Fired Generation through 2020

Utility	Facility	Expiration	Annual GWh
LADWP	Intermountain	through 2013	3,163
DWR	Reid Gardner	2013	1,211
SDG&E	Boardman	2013	555
SCE	Four Corners[a]	2016	4,920
Turlock ID	Boardman	2018	370
PG&E , SCE	miscellaneous QFs	through 2019	4,086
LADWP	Navajo	2019	3,832
Total			**18,137**

Source: Energy Commission Staff
[a] Application for 2012 sale pending

THE ROLE OF THE PPEC IN LOCAL GENERATION DISPLACEMENT

As a generation facility in the California ISO-defined San Diego local capacity area (LCA), the PPEC will provide local reliability services.

In addition to system-wide needs for capacity to meet reserve margin requirements and possibly integrate intermittent renewable resources, the CAISO has defined numerous transmission-constrained LCAs and sub-areas in which threshold amounts of dependable capacity are needed to reliably serve load. The needed amounts are determined annually and presented by the CAISO in their *Local Capacity Technical Analysis*. The PPEC would contribute 300 MW of local capacity to the San Diego

LCA,[22] obviating the need for 300 MW of older, less efficient local capacity (e.g., units at Encina). This older capacity is no longer needed for local reliability and, if unprofitable and not needed for system-wide reliability, can now retire.

Local reliability requires generation by local resources. Under higher load conditions, a share of local capacity must be synchronous to the grid or available within a few minutes. For example, the *2012 Local Capacity Technical Analysis* indicates a local capacity requirement for San Diego of 2,849 MW, based on a peak demand forecast of 4,844 MW.[23] At loads of 3,500 MW in the San Diego LCA, some 1,500 MW of generation capacity thus needs to be synchronous to the grid or available on a few minute's notice. This requires that some share of the 1,500 MW be generating electricity, as there are not 1,500 MW of capacity in the San Diego LCA capable of providing energy on such notice. In addition, reliable service in the San Diego LCA requires that a minimum share of the area's load be met with local generation.[24]

The number of hours per year that the PPEC would be required to operate in support of local reliability needs is not known. When called upon to do so, however, it would displace a less-efficient resource, reducing GHG emissions resulting from relying on the latter. The units at Encina, for example, have full load heat rates in excess of 10,000 Btu/kWh, minimum load heat rates above 12,000 Btu/kWh, and require several hours to start up, requiring that they be left on at minimum load overnight when needed for local reliability. The PPEC would be a much lower-cost and lower-GHG provider of local reliability services as it could remain off-line until needed and then provide energy more efficiently (i.e., at a lower heat rate).

AVENAL PRECEDENT DECISION

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

PROPOSED CONDITIONS OF CERTIFICATION

No Conditions of Certification related to greenhouse gas emissions are proposed. The project owner would comply with mandatory ARB GHG emissions reporting regulations

[22] SDG&E's application asserts that the PPEC is needed to meet long-run local capacity requirements in the San Diego LRA; parties protesting the application contend that the local capacity provided by the PPEC is not needed.

[23] This figure includes 74 MW of losses.

[24] ISO Operating Procedure 7810; the details of this operating procedure are market-sensitive and thus confidential.

(California Code of Regulations, tit. 17, Subchapter 10, Article 2, sections 95100 et. seq.) and/or future GHG regulations formulated by the U. S. EPA or the ARB, such as GHG emissions cap and trade markets.

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BIOLOGICAL RESOURCES

Ann Crisp and Heather Blair

SUMMARY OF CONCLUSIONS

The potential for the proposed Pio Pico Energy Center (PPEC) project area to support sensitive biological resources is low; no special-status wildlife species were observed and only one special-status plant species was identified (San Diego marsh-elder; California rare plant rank 2.2). However, sensitive biological resources may be found along the proposed linear routes and adjacent to the project site, particularly along the drainage under biological conservation easement near proposed Transmission Line Route B.

Impacts to special-status species from construction and operation of the proposed PPEC include potential loss of dens along the linear routes, disturbance to breeding or nesting animals in habitat adjacent to the PPEC site and linear routes, and disturbance impacts from construction and operation noise and lighting. Direct impacts to the majority of special-status species would be avoided and minimized by conducting comprehensive pre-construction surveys, erecting exclusion fencing prior to site mobilization, and avoiding the biological conservation easement (including the drainage). With implementation of applicant-proposed impact avoidance and minimization measures and staff's proposed conditions of certification, direct impacts to biological resources would be less than significant.

Significant indirect and cumulative impacts to critical habitat for the federally endangered Quino checkerspot butterfly, federally threatened coastal California gnatcatcher, and federally threatened and state endangered Otay tarplant in the nearby San Ysidro Mountains would occur from nitrogen deposition caused by PPEC emissions and the resultant noxious weed proliferation and cascading ecological effects (e.g., competition, habitat type conversion, and wildfire). Staff developed proposed Condition of Certification **BIO-13** (Weed Abatement Program Funding or Land Acquisition) in coordination with U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), and San Diego County Department of Planning and Land Use (DPLU) that would reduce nitrogen deposition impacts below the level of significance; however, feasibility of the proposed mitigation is currently uncertain. Prior to publication of the Final Staff Assessment, staff requires demonstration of the feasibility of options to implement a weed abatement program or purchase habitat compensation to mitigate indirect and cumulative impacts from nitrogen deposition. In particular, an existing weed abatement program meeting the aforementioned criteria that is in need of funds must be identified or a landowner willing to sell or place land under permanent conservation easement at which to implement a new weed abatement program must be identified. Staff will also conduct independent research and work with CDFG and USFWS to assess feasibility. Provided that these issues are resolved, such weed abatement or land acquisition would mitigate the project's impacts from nitrogen deposition within critical habitat below the level of significance.

The proposed project would be in compliance with LORS pertaining to biological resources, including the federal and California endangered species acts and the federal Clean Water Act.

INTRODUCTION

This section provides the California Energy Commission (Energy Commission) staff's analysis of potential biological resource impacts from the construction and operation of the proposed Pio Pico Energy Center (PPEC). This analysis addresses potential impacts to special-status species, wetlands and other waters of the U.S., surface waters, and other sensitive areas of biological concern. This analysis includes a detailed description of the existing biotic environment and analysis of potential impacts to biological resources that are likely to occur during construction and operation of the proposed PPEC. Where necessary, specific mitigation measures (conditions of certification) to reduce potential impacts to less-than-significant levels have been identified. Additionally, this analysis assesses compliance with applicable laws, ordinances, regulations, and standards (LORS).

This analysis is based, in part, on information provided in the PPEC Application for Certification (AFC) Volumes 1 and 2 (PPEC 2011a), Data Adequacy Supplement (PPEC 2011d), AFC Refinement (PPEC 2011h), responses to data requests (PPEC 2011k, PPEC 2011m, PPEC 2011n, PPEC 2011o, PPEC 2011p, PPEC 2011r, PPEC 2011s, PPEC 2011t), staff's observations during site visits of the proposed PPEC site and off-site linear routes on March 24 and August 23, 2011, and ongoing discussions with the USEPA, USFWS, CDFG, USACE, and the County of San Diego DPLU.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The applicant would need to abide by the laws, ordinances, regulations, and standards listed in **BIOLOGICAL RESOURCES Table 1** during project construction and operation.

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

Applicable Law	Description
FEDERAL	
Clean Water Act of 1977 (Title 33, United States Code, sections 1251–1376, 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 USACE for a discharge of 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. By federal law, every applicant for a federal permit or license for an activity that may result in a discharge into a California water body, including wetlands, must request state certification that the proposed activity will not violate state and federal water quality standards.
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 the protection of threatened and endangered plant and animal species and their critical habitat. The administering agencies are the USFWS and National Marine Fisheries Service.
Eagle Act (Title 50, Code of Federal Regulations, sections 22.26)	Authorizes limited take of bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) where the taking is associated with, but not the purpose of the activity, and cannot practicably be avoided. The administering agency is the USFWS.
Eagle Act (Title 50, Code of Federal Regulations, section 22.27)	Provides for the intentional take of eagle nests where necessary to alleviate a safety hazard to people or eagles; necessary to ensure public health and safety; the nest prevents the use of a human – engineered structure, or; the activity, or mitigation for the activity, will provide a net benefit to eagles. Only inactive nests would be allowed to be taken except in the case of safety emergencies. The administering agency is the USFWS.
Bald and Golden Eagle Protection Act (Title 16, United States Code section 668)	Provides for the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the take, possession, and commerce of such birds. The 1972 amendments increased penalties for violating provisions of the Act or regulations issued pursuant thereto and strengthened other enforcement measures. The administering agency is the USFWS.
Migratory Bird Treaty (Title 16, United States Code, sections 703 through 711)	Prohibits the take or possession of any migratory nongame bird (or any part of such migratory nongame bird), including nests with viable eggs. The administering agency is the USFWS.
Migratory Bird Treaty Reform Act (70 F.R. 12710-12716 (March 15, 2005))	Includes a significant change to the Migratory Bird Treaty Act (MBTA). The law now excludes those species considered to be not native to the United States. The Secretary of the Interior published in the Federal Register the final list of bird species to which the MBTA does not apply. The administering agency is the USFWS.
Fish and Wildlife Coordination Act (Title 16, United States Code, section 661 et seq.)	Requires federal agencies to coordinate federal actions with the USFWS to conserve fish and wildlife resources.
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 CDFG.

Applicable Law	Description
California Code of Regulations (Title 14, sections 670.2 and 670.5)	Lists the plants and animals that are classified as rare, threatened, or endangered in California. The administering agency is CDFG.
California Code of Regulations (Title 20, sections 1702(q) and (v))	Protects "areas of critical concern" and "species of special concern" identified by local, state, or federal resource agencies within the project area, including the California Native Plant Society (CNPS). The administering state agency is CDFG.
Natural Communities Conservation Planning Act (NCCPA) of 2002 (Fish and Game Code, sections 2800 through 2835)	Established the NCCPA program, which is a cooperative effort between public and private partners that uses a broad-based ecosystem approach to protecting multiple habitats and species. The administering agency is CDFG.
Fully Protected Species (Fish and Game Code, sections 3511, 4700, 5050, and 5515)	Designates certain species as fully protected and prohibits take of such species. The administering agency is CDFG.
Native Plant Protection Act (Fish and Game Code, section 1900 et seq.)	Designates rare, threatened, and endangered plants in California and prohibits the taking of listed plants. The administering agency is CDFG.
Nest or Eggs (Fish and Game Code, section 3503)	Prohibits take, possession, or needless destruction of the nest or eggs of any bird. The administering agency is CDFG.
Birds of Prey (Fish and Game Code, section 3503.5)	Specifically protects California's birds of prey in the orders Falconiformes and Strigiformes by making it unlawful to take, possess, or destroy any such birds of prey or to take, possess, or destroy the nest or eggs of any such bird. The administering agency is CDFG.
Migratory Birds (Fish and Game Code, section 3513)	Prohibits take or possession of any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird. The administering agency is CDFG.
Significant Natural Areas (Fish and Game Code section 1930 et seq.)	Designates certain areas such as refuges, natural sloughs, riparian areas, and vernal pools as significant wildlife habitat. The administering agency is CDFG.
Nongame mammals (Fish and Game Code section 4150)	Makes it unlawful to take or possess any non-game mammal or parts thereof except as provided in the Fish and Game Code or in accordance with regulations adopted by the commission.
Public Resources Code, sections 25500 and 25527	Prohibits siting of facilities in certain areas of critical concern for biological resource, such as ecological preserves, refuges, etc. The administering agency is the Energy Commission in coordination with CDFG.
Streambed Alteration Agreement (Fish and Game Code sections 1600 and following)	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 CDFG 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 CDFG.
Oak Woodlands Conservation Act (Fish and Game Code Section (1360-1372)	Establishes a fund for the conservation of oak woodlands, supports community growth and outreach, purchase and conservation of oak woodlands, and directs future planning and conservation of oak woodlands. The administering agency is California Wildlife Conservation Board.
LOCAL	
San Diego County Ordinance Section 86.501-86.509; 8845, 9246, 9632, and 10039	Provides guidelines for mitigation implementation for projects within the San Diego County Subregional Plan.

Applicable Law	Description
San Diego Multiple Species Conservation Program (MSCP)	Addresses the needs of multiple species and the preservation of natural vegetation communities in San Diego County. The MSCP Subregional Plan was adopted by the City of San Diego and San Diego County in 1997. The Subarea Plan is a policy document through which the MSCP Subregional Plan is implemented within the County's jurisdiction; it provides a blueprint for habitat preservation and forms the basis for federal and state incidental take permits for 86 plant and animal species within the County.
Otay Subregional Plan – Conservation Element	Intended to promote orderly development, protect environmental and manmade resources, and implement the County of San Diego's objectives for growth management and the structure of government for the Otay Subregion. The Subregional Plan supplements all existing elements of the San Diego County General Plan. The Conservation Element outlines goals to protect environmental resources and objectives to protect Resource Conservation Areas and develop adequate preservation methods.

SETTING

REGIONAL SETTING

The proposed PPEC is located at the southeast quadrant of the intersection of Alta Road and Calzada De La Fuente, in an unincorporated area of San Diego County. As proposed, the PPEC site is near the western base of the San Ysidro Mountains at an elevation approximately 635 feet above mean sea level. Terrain is generally flat to the west and south of the project site. The proposed PPEC site is located approximately 1.5 miles north of the border between the U.S. and Mexico.

Significant ecological areas within five miles of the proposed PPEC include the following:

- **Otay Lakes County Park.** This 78-acre park includes recreational facilities as well as bird watching opportunities and a native plant/demonstration garden. Otay Lakes County Park is located approximately 2 miles north of the proposed project site.
- **Otay County Open Space Preserve.** This preserve is a hard-line preserve and includes over 11,000 acres to be set-aside as mitigation for impacts to sensitive resources resulting from Otay Ranch development that will occur both within the County of San Diego and the City of Chula Vista. The Preserve has been designed and will be managed specifically for protection and enhancement of multiple species present on Otay Ranch. The Otay County Open Space Preserve is located approximately 3 miles northeast of the proposed project site.
- **Upper and Lower Otay Lakes.** Includes two water supply reservoirs that also provide important habitat and recreational opportunities. Lower Otay Lake is the closest of the two lakes to the project and located approximately 2.5 miles north of the proposed project site.
- **Otay Mountain Wilderness.** This 16,885 acre wilderness area is managed by the U.S. Bureau of Land Management. It is located near the U.S.-Mexico border in eastern San Diego County and is home to 20 sensitive plant and animal species,

including the federally endangered Quino checkerspot butterfly, stands of Tecate cypress, and populations of the federally endangered Mexican flannelbush. The Otay Mountain Wilderness is located approximately 3 miles northeast of the proposed project site.

PROJECT SITE AND VICINITY DESCRIPTION

The proposed project area consists of the PPEC power plant site (PPEC site), construction laydown area, and all associated linear facilities (i.e., electrical transmission line and gas supply pipeline). The PPEC site would occupy approximately 10 acres. The 6-acre construction laydown area is located in a graded, unpaved area immediately south of the PPEC site.

The proposed PPEC site is bounded to the north by a vacant lot zoned heavy industrial, to the east by the Otay Mesa Generating Project and San Diego Gas and Electric (SDG&E) Otay Mesa switchyard, to the south by a vacant lot zoned technology business park, and to the west by Alta Road and a vacant lot zoned heavy industrial. Several conservation easements recorded in favor of the County of San Diego are located within the proposed 230-kV Transmission Line Route B corridor.

SPECIAL MANAGEMENT AREAS

Multi Species Conservation Plan South County Subarea Plan

The proposed PPEC is located within the County of San Diego Multiple Species Conservation Program (MSCP) Subarea Plan. The MSCP is a comprehensive, long-term habitat conservation plan that addresses the needs of multiple species and the preservation of natural vegetation communities in the County of San Diego. The MSCP addresses the potential impacts of urban growth, natural habitat loss and species endangerment and creates a plan to mitigate the potential loss of covered species and their habitat due to the direct impacts of future development of both public and private lands within the MSCP area. The total MSCP area encompasses 12 jurisdictions and consists of 582,243 acres, of which 43% (252,132 acres) is in unincorporated areas under the jurisdiction of the county of San Diego (CSD 1997).

The MSCP is a subregional plan under the Natural Communities Conservation Program and is implemented through local subarea plans. San Diego County's Subarea Plan covers 85 species and is divided into three segments: Lake Hodges, Metropolitan-Lakeside-Jamul, and South County. The proposed PPEC is located within the South County Subarea Plan and includes approximately 82,767 acres in the southwestern section of the county. Furthermore, the PPEC site is within the Otay Mesa Business Park Specific Plan (Specific Plan) area which sets out a comprehensive development plan for the development of 3,300 acres within the East Otay Mesa Specific Plan Area

Since approval of the original Otay Mesa Business Park Specific Plan, most of the Specific Plan area has been identified as Amendment Areas to the MSCP. In order for development proposals to be approved and take authorization to be given to the landowner, the amendment process must first be completed as specified in the MSCP Subarea Plan. These Amendment Areas include Major Amendment Areas, Minor Amendment Areas, and Minor Amendment Areas with Special Considerations (CSD

2010a).

The PPEC falls within an existing Minor Amendment Area (CSD 2010a Figure 1.2-1). Processing a Minor Amendment to the MSCP requires preparation of a California Environmental Quality Act (CEQA) document, a biological resources report, identification of any mitigation required by the Biological Mitigation Ordinance (BMO), and concurrence by the local offices of the USFWS and CDFG (CSD 2010a).

On August 30, 2001, the County of San Diego DPLU requested concurrence from the USFWS and the CDFG with approval of a Minor Amendment to the MSCP Subarea Plan. The County also provided the agencies with additional information in a letter dated November 1, 2001 to support the Minor Amendment request. The Minor Amendment encompassed the subdivision of a 79.09-acre parcel identified as Tentative Parcel Map (TPM) 20570 which included the Otay Mesa Generating Project (OMGP) (CSD 2006).

USFWS and CDFG granted conditional concurrence with the Minor Amendment to the MSCP in a letter dated December 6, 2001 if specific conditions were incorporated. These conditions required a site assessment for Quino checkerspot butterfly and surveys for Otay tarplant (CSD 2001). The OMGP owner submitted the required documentation that satisfied these conditions and was given take authorization under the MSCP and development was allowed. Parcel Map Number 20473, recorded on April 23, 2008, created four parcels, including one slated for the OMGP (Parcel 3) and one (Parcel 1) slated for the proposed PPEC. Because agency concurrence was for the entire 79.09-acre parcel and not tied to a specific subdivision map, the proposed PPEC is in compliance with the South County Subarea Plan.

Energy Commission staff confirmed with CDFG (Lucas 2011b), USFWS (Porter 2011a), and County DPLU staff (Ehsan 2011) that the Minor Amendment conditions have been met and no additional mitigation is required for the PPEC parcel to be considered a Minor Amendment Area.

Existing Vegetation and Wildlife

The applicant conducted biological field surveys within the proposed project area, which includes the PPEC site, laydown area and all associated linear facilities, in November 2010. The applicant's survey of the proposed project area included an inventory of all plant and wildlife species observed and an assessment of potential habitat suitability for special-status species. USFWS protocol vernal pool fairy shrimp wet season surveys were conducted from December 14, 2010 to April 12, 2011 within the project area and a 500-foot buffer (PPEC 2001o). USFWS protocol Quino checkerspot butterfly surveys were conducted on March 11, 2011 within the project area and a 500-foot buffer (PPEC 2011d). A wetland delineation was conducted on December 6, 2010 and May 18, 2011 (PPEC 2011h). The following description of biological resources presents the results of surveys of the PPEC project area and vicinity as well as observations from staff's site visits on March 24 and August 23, 2011.

The majority of the project would be located in previously disturbed areas; however portions of Transmission Line Route B are located in less disturbed areas south of the existing OMGP. The proposed PPEC site is located within an area that has been

recently graded and excavated for an unrelated project per an existing grading permit issued to SD Commercial, LLC. SD Commercial, LLC is now leasing the property to the applicant. The natural gas supply line route would be located along or within existing roads and road shoulders that are adjacent to developed areas or areas characterized by ruderal vegetation, agricultural areas, and ephemeral drainages. The project would tie into an existing water supply line located along existing roads. Construction laydown areas would be in a previously graded area south of the PPEC site.

Project Site, Construction Laydown Areas, and Project Linear Routes

The following vegetation communities were identified within the project site, construction laydown areas, and linear routes during biological field surveys (PPEC 2011h). The project study area includes the project's proposed ground disturbance footprint and a 500-foot buffer, to the maximum extent practical.

California Annual Grassland

The primary vegetation community found throughout the project study area is California annual grassland, including approximately 2.7 acres along Transmission Line Route B. Though native and non-native forbs are present, this habitat consists primarily of non-native annual grasses which include slender wild oats (*Avena barbata*), ripgut brome (*Bromus diandrus*), and red brome (*B. madritensis* ssp. *rubens*). These non-native annual grasslands are a disturbance-related community and have replaced many native grassland and coastal sage scrub habitats throughout southern California. The non-native grasslands may provide nesting and/or foraging habitat for special-status species such as burrowing owl (*Athene cunicularia hypugaea*), golden eagle (*Aquila chrysaetos*), and northern harrier (*Circus cyaneus*).

Disturbed/Developed

The other vegetation community found in the project study area is disturbed/developed, which covers approximately 23 acres of the project area. The disturbed areas are dominated primarily by native and non-native forbs and to a lesser extent, non-native annual grasses. The common forbs include black mustard (*Brassica nigra*), Mediterranean hoary mustard (*Hirschfeldia incana*), and horseweed (*Conyza canadensis*). Developed areas within the project study area consist of the OGMP, roadways, parking lots, vacant lots, residences, and other private/public infrastructure with landscape species. The adjacent OMGP is landscaped with non-native ornamental trees such as red ironbark (*Eucalyptus sideroxylon*) and New Zealand flax (*Phorium tenax*). These plantings are of sufficient canopy cover and height to potentially support nesting and roosting raptors and other birds.

Wildlife

Although the proposed PPEC site and laydown area have been recently graded, there is habitat along the project linear features and adjacent to the PPEC site that is capable of supporting a diverse assemblage of wildlife. Observations in the project area included various common wildlife species such as western fence lizard (*Sceloperous occidentalis*), great egret (*Ardea alba*), mourning dove (*Zenaida macroura*), western meadowlark (*Sturnella neglecta*), blue gray gnatcatcher (*Polioptila caerulea*), Anna's hummingbird (*Calypte anna*), black phoebe (*Sayornis nigricans*), Cassin's kingbird

(*Tyrannus vocierans*), northern mockingbird (*Mimus polyglottos*), Amercian crow (*Corvus brachyrhynchos*), common raven (*Corvus corax*), white-crowned sparrow (*Zonotrichia leucophrys*), and house finch (*Carpodacus mexicanus*). Raptors observed in the project area include red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), and barn owl (*Tyto alba*). Sign of domestic dog (*Canis familiaris*), coyote (*Canis latrans*), cottontail (*Sylvilagus* sp.), and California ground squirrel (*Otospermophilus beecheyi*) were also observed.

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:

- Listed as threatened or endangered or candidates for future listing as threatened or endangered under the California Endangered Species Act or Federal Endangered Species Act;
- Protected under other state or federal regulations (e.g., Migratory Bird Treaty Act);
- Listed as Species of Special Concern or a Fully Protected Species by CDFG;
- A plant species considered by the California Native Plant Society (CNPS) to be "rare, threatened, or endangered in California" (California Rare Plant Rank 1A, 1B, and 2);
- Plants listed as rare under the California Native Plant Protection Act;
- Considered a locally significant species, that is, a species that is not rare from a statewide perspective, but is rare or uncommon in a local context such as within a county or region or is so designated in local or regional plans, policies, or ordinances; or
- Any other species receiving consideration during environmental review under CEQA.

Biological Resources Table 2 identifies the special-status species that were reported to occur or potentially occur within five miles of the project area, based on surveys of the proposed project area and vicinity based on field surveys and database search results of CDFG's California Natural Diversity Database (CNDDB) (CDFG 2011) and California Native Plant Society's (CNPS) Inventory of Rare and Endangered Plants (CNPS 2011). No special-status wildlife species were observed during surveys of the project area; the only special-status plant species observed was San Diego marsh-elder (California rare plant rank 2.2), which was observed within the drainage near proposed Transmission Line Route B. A lack of suitable, natural habitat in the project area reduces the likelihood of occurrence of the majority of these species. Species present in the proposed project area or with at least a moderate potential to occur are discussed in more detail following **Biological Resources Table 2**.

Riverside fairy shrimp (*Streptocephalus wootoni*) and San Diego fairy shrimp (*Branchinecta sandiegonensis*) potentially occur in the project area along Previous Gas Line Route A. A wet season survey conducted in suitable habitat along Previous Gas

Line Route A identified two *Branchinecta* females in two separate pools; these individuals were too small to identify to species. The applicant submitted an AFC Refinement on June 8, 2011 which identified Modified Gas Line Route A. The original route was modified to avoid known populations of fairy shrimp within the project area and avoid all vernal pools along the unpaved portion of Alta Road (PPEC 2011o). Since the modified gas line alignment avoids all fairy shrimp habitat, a dry season survey or second wet season survey is not necessary and therefore a complete protocol survey will not be required (Porter 2011b). There is no suitable habitat for this species within the project site, laydown area, along the Transmission Line Route A or B, or adjacent to Modified Gas Line Route A and B.

Biological Resources Table 2
Special Status Species Potentially Occurring Within Pio Pico Energy Center Project Area

Species	Status[1]	Habitat	Potential to Occur in the Project Area
Plants			
San Diego thorn-mint (*Acanthominta ilicifolia*)	FT, SE, RPR 1B.1, S2, G2, NE, MSCP	Openings in chaparral, coastal scrub, valley and foothill grassland, and vernal pools in clay soils; elevation 5 to 300 feet; blooms April–June	Low
California adolphia (*Adolphia californica*)	RPR 2.1, S2, G3G4	Chaparral, coastal shrub, and valley and foothill grassland in clay soils; elevation 10 to 230 feet; blooms December–May	Low
San Diego bur-sage (*Ambrosia chenopodiifolia*)	RPR 2.1, S2.1, G3?	Coastal scrub; elevation 15 to 50 feet; blooms April–June	Low
singlewhorl burrobush (*Ambrosia monogyra*)	RPR 2.2, S2.2, G5	Chaparral and Sonoran desert scrub in sandy soils; elevation 5 to 150 feet; blooms August–November	Absent
San Diego ambrosia (*Ambrosia pumila*)	FE, RPR 1B.1, S1.1, G1, MSCP	Often in disturbed areas, sometimes alkaline areas in chaparral, coastal sage scrub, valley and foothill grassland, and vernal pools in sandy loam or clay soils; elevation 5 to 125 feet; blooms April–October	Low
Otay manzanita (*Arctostaphylos otayensis*)	RPR 1B.2, S2.1, G2, MSCP	Chaparral and valley and foothill grassland in metavolcanic soils; elevation 85 to 520 feet; blooms January–April	Low
Coulter's saltbush (*Atriplex coulteri*)	RPR 1B.2, S2.2, G2	Coastal bluff scrub, coastal dunes, coastal scrub, valley and foothill grassland in alkaline or clay soils; elevation up to 140 feet; blooms March–October	Low
South Coast saltscale (*Atriplex pacifica*)	RPR 1B.2, S2, G3G4	Coastal bluff scrub, coastal dunes, coastal scrub, and playas; elevation up to 40 feet; blooms March–October	Low
Encinitas baccharis (*Baccharis vanessae*)	FT, SE, RPR 1B.1, S1.1, G1, MSCP	Maritime chaparral and cismontane woodland in sandstone substrate; elevation 15 to 220 feet; blooms August–November	Absent

Species	Status[1]	Habitat	Potential to Occur in the Project Area
golden-spined cereus (*Bergerocactus emoryi*)	RPR 2.2, S2.1, G2G3	Closed-cone coniferous forest, chaparral, and coastal scrub in sandy soils; elevation up to 120 feet; blooms May–June	Absent
San Diego goldenstar (*Bloomeria clevelandii*)	RPR 1B.1, S2, G2, MSCP	Chaparral, coastal scrub, valley and foothill grassland, and vernal pools in clay soils; elevation 15 to 145 feet; blooms April–May	Low
Orcutt's brodiaea (*Brodiaea orcuttii*)	RPR 1B.1, S1, G1, MSCP	Mesic areas with clay soils, sometimes serpentine soils in closed-cone coniferous forest, chaparral, cismontane woodland, coastal scrub, meadows and seeps, valley and foothill grassland; elevation 5 to 515 feet; blooms May–July	Low
round-leaved filaree (*California macrophylla*)	RPR 1B.1, S2, G2	Cismontane woodland and valley and foothill grasslands in clay soils; elevation up to 365 feet; blooms March–May	Low
Dunn's mariposa-lily (*Calochortus dunnii*)	SR, RPR 1B.2, S2.1, G2, NE, MSCP	Rocky gabbroic or metavolcanic soils in closed-cone coniferous forest, chaparral, valley and foothill grassland; elevation 55 to 560 feet; blooms April–June	Absent
Lewis' evening primrose (*Camissonia lewisii*)	RPR 3, S1S3, G2G3	Coastal bluff scrub, coastal scrub, coastal dunes, cismontane woodland, valley and foothill grassland in sandy or clay soils; elevation up to 95 feet; blooms March–June	Low
Lakeside ceanothus (*Ceanothus cyaneus*)	RPR 1B.2, S2.2, G2, NE, MSCP	Closed-cone coniferous forest and chaparral; elevation 70 to 230 feet; blooms April–June	Absent
Otay Mountain ceanothus (*Ceanothus otayensis*)	RPR 1B.2, S1.2, G1	Chaparral in metavolcanic or gabbroic rock; elevation 1,969 to 3,609 feet; blooms January−April	Absent
summer holly (*Comarostaphylis diversifolia ssp. diversifolia*)	RPR 1B.2, S2, G3T2	Chaparral and cismontane woodland; elevation 328 to 1,968 feet; blooms April–June	Absent
Otay tarplant (*Deinandra conjugens*)	FT, SE, RPR 1B.1, S1.1, G1, NE, MSCP	Coastal scrub and valley and foothill grassland in clay soils; elevation 82 to 984 feet; blooms May–June	Moderate[2]
western dichondra (*Dichondra occidentalis*)	RPR 4.2, S3.2, G4?	Chaparral, cismontane woodland, coastal scrub, valley and foothill woodland; elevation 164 to 1,640 feet; blooms January–July	Low
Orcutt's bird's-beak (*Dicranostegia orcuttiana*)	RPR 2.1, S1.1, G2?, MSCP	Coastal scrub; elevation 33 to 1,148 feet; blooms March–September	Low

Species	Status[1]	Habitat	Potential to Occur in the Project Area
variegated dudleya (*Dudleya variegata*)	RPR 1B.2, S2.2, G2, NE, MSCP	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland, and vernal pools in clay soils; elevation 10 to 1,903 feet; blooms April–June	Low
San Diego button-celery (*Eryngium aristulatum var. parishii*)	FE, SE, RPR 1B.1, S2.1, G5T2, MSCP	Mesic areas in coastal scrub, valley and foothill grassland, and vernal pools; elevation 65 to 2,034 feet; blooms April–June	Low
cliff spurge (*Euphorbia misera*)	RPR 2.2, S1, G5	Coastal bluff scrub, coastal scrub, and Mojavean desert scrub in rocky soils; elevation 33 to 1,640 feet; blooms December–August	Absent
San Diego barrel cactus (*Ferocactus viridescens*)	RPR 2.1, S2, G4, MSCP	Chaparral, coastal scrub, valley and foothill grassland, and vernal pools; elevation 10 to 1,478 feet; blooms May–June	Low
Mexican flannelbush (*Fremontodendron mexicanum*)	FE, SR, RPR 1B.1, S2.1, G2	Closed-cone coniferous forest, chaparral, and cismontane woodland in gabbroic, metavolcanic or serpentine soils; elevation 33 to 2,350 feet; blooms March–June	Absent
Palmer's grapplinghook (*Harpagonella palmeri*)	RPR 4.2, S3.2, G4	Chaparral, coastal scrub, and valley and foothill grassland in clay soils; 65 to 3,133 feet; blooms March–May	Low
Tecate cypress (*Hesperocyparis forbesii*)	RPR 1B.1, S1.1, G2, MSCP	Closed-cone coniferous forest and chaparral in clay, gabbroic, or metavolcanic soils; elevation 837 to 4,921 feet; no blooming period specified	Absent
Otay Mountain lotus (*Hosackia crassifolius var. otayensis*)	1B.1, S1.1, G5T1	Often in disturbed areas of chaparral in metavolcanic soils; elevation 3,002 to 3,297 feet; blooms May–August	Absent
San Diego marsh-elder (*Iva hayesiana*)	RPR 2.2, S2.2?, G3?	Marshes, swamps, and playas; 33 to 1,640 feet; blooms April–October	Present
Gander's pitcher sage (*Lepechinia ganderi*)	RPR 1B.3, S2.2, G2, NE, MSCP	Closed-cone coniferous forest, chaparral, coastal scrub, and valley and foothill grassland in gabbroic or metavolcanic soils; elevation 1,000 to 3,297 feet; blooms June–July	Absent
Robinson's pepper-grass (*Lepidium virginicum var. robinsonii*)	RPR 1B.2, S2.2, G5T2?	Chaparral and coastal scrub; elevation 3 to 2,904 feet; blooms January–July	Low
felt-leaved monardella (*Monardella hypoleuca ssp. lanata*)	RPR 1B.2, S2.2, G4T2	Chaparral and cismontane woodland; elevation 984 to 5,167 feet; blooms June–August	Low
Jennifer's monardella (*Monardella stoneana*)	RPR 1B.2, S1.2, G1	Usually in rocky, intermittent streambeds in closed-cone coniferous forest, chaparral, coastal scrub, and riparian scrub; elevation 33 to 2,592 feet; blooms June–September	Low

Species	Status[1]	Habitat	Potential to Occur in the Project Area
willowy monardella (*Monardella viminea*)	FE, SE, RPR 1B.1, S2.1, G2, NE, MSCP	Alluvial ephemeral washes in chaparral, coastal scrub, riparian forest, riparian scrub, and riparian woodland; elevation 164 to 738 feet; blooms June–August	Absent
Little mousetail (*Myosurus minimus ssp. apus*)	RPR 3.1, S2.2, G5T2Q	Valley and foothill grassland and alkaline vernal pools; elevation 65 to 3,000 feet; blooms March–June	Low
mud nama (*Nama stenocarpum*)	RPR 2.2, S1S2, G4G5	Marsh and swamps (lake margins and riverbanks) ; elevation 16 to 1,640 feet; blooms January–July	Absent
Moran's nosegay (*Navarretia fossalis*)	FT, RPR 1B.1, S1, G1	Chenopod scrub, playas, vernal pools, and assorted shallow freshwater areas in marshes and swamps; elevation 98 to 2,149 feet; blooms April–June	Absent
Snake cholla (*Opuntia californica var. californica*)	RPR 1B.1, S1.1, G3T2, MSCP	Chaparral and coastal scrub; elevation 98 to 492 feet; blooms April–May	Low
California Orcutt grass (*Orcuttia californica*)	FE, SE, RPR 1B.1, S2.1, G2, MSCP	Vernal pools; elevation 49 to 2,165 feet; blooms April–August	Absent
Otay Mesa mint (*Pogogyne nudiuscula*)	FE, SE, RPR 1B.1, S1.1, G1, MSCP	Vernal pools; elevation 295 to 820 feet; blooms May–July	Absent
Cedros Island oak (*Quercus cedrosensis*)	RPR 2.2, S1.2, G2?	Closed-cone coniferous forest, chaparral, and coastal scrub; elevation 837 to 1,099 feet; blooms April–May	Absent
Nuttall's scrub oak (*Quercus dumosa*)	RPR 1B.1, S1.1, G1G2	Closed-cone coniferous forest, chaparral, and coastal scrub in sandy, clay loam soils; elevation 49 to 1,312 feet; blooms February–August	Absent
Munz's sage (*Salvia munzii*)	RPR 2.2, S2.2, G3	Chaparral and coastal scrub; elevation 120 to 1,065 feet; blooms February–April	Absent
ashy spike-moss (*Selaginella cinerascens*)	RPR 4.1, S3S4, G3G4	Chaparral and coastal scrub; elevation 65 to 2,100 feet	Low
purple stemodia (*Stemodia durantifolia*)	RPR 2.1, S2.1?, G5	Often in mesic sandy soils in Sonoran desert scrub; elevation 0 to 984 feet; blooms January–December	Absent
Laguna Mountains jewel-flower (*Streptanthus bernardinus*)	RPR 4.3, S3.3, G3	Chaparral and lower montane coniferous forest; elevation 2,198 to 8,202 feet; blooms May–August	Absent
Parry's tetracoccus (*Tetracoccus dioicus*)	RPR 1B.2, S2.2, G3, MSCP	Chaparral and coastal scrub; elevation 541 to 3,291 feet; blooms April–May	Low
Wildlife	**Status**	**Habitat**	**Potential to Occur in the Project Area**
Invertebrates			

Species	Status[1]	Habitat	Potential to Occur in the Project Area
San Diego fairy shrimp (*Branchinecta sandiegonensis*)	FE, S1, G2, MSCP	Tectonic swales/earth slump basins in grassland and coastal sage scrub habitats in seasonally astatic pools filled by winter/spring rains	Absent
Thorne's hairstreak (*Callophyrs thornei*)	S1, G1, MSCP	Dependent on tecate cypress as the host plant in chaparral or closed-cone coniferous forest	Absent
Quino checkerspot butterfly (*Euphydryas editha quino*)	FE, S1, G5T1	Larvae feeds on dwarf plantain or exserted Indian paintbrush in open coastal sage scrub, chaparral, and grassland habitats	Absent[2]
Riverside fairy shrimp (*Streptocephalus woottoni*)	FE, S1, G1, MSCP	Tectonic swales/earth slump basins in grassland and coastal sage scrub habitats in seasonally astatic pools filled by winter/spring rains	Absent
Amphibians			
western spadefoot (*Spea hammondii*)	SSC, S3, G3	Vernal pools and wetlands in cismontane woodland, coastal scrub, valley and foothill grasslands	Low
Reptiles			
orange-throated whiptail (*Aspidoscelis tigris stejnegeri*)	SSC, S2, G5	Washes, streams, terraces, and other sandy areas, often where there are rocks and patches of brush and rocky hillsides in coastal chaparral, thornscrub, and streamside growth	Low
coastal whiptail (*Aspidoscelis tigris stejnegeri)*	S2S3, G5T3T4	Grasslands, coastal sage scrub, chaparral, and woodlands	Low
coast horned lizard (*Phrynosoma blainvilli*)	SSC, S3S4, G4G5	Open areas with loose fine soils in chaparral, cismontane woodland, coastal bluff scrub, coastal scrub, desert wash, pinyon and juniper woodlands, riparian scrub, riparian woodland, valley and foothill grassland	Low
coast patch-nosed snake (*Salvadora hexalepis virgultea*)	SSC, S2S3, G5T3	Semi-arid brushy areas of canyons, rocky hillsides, and plains in chaparral	Absent
two-striped garter snake (*Thamnophis hammondii*)	SSC, S2, G3	Near water sources, often in rocky areas of oak woodland, chaparral, brushland, and coniferous forest	Absent
Birds			
southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)	WL, S2S3, G5T2T4, MSCP	Open shrubby habitat on rocky, xeric slopes in coastal sage scrub, coastal bluff scrub, and chaparral	Low
western burrowing owl (*Athene cunicularia*)	SSC, S2, G4, MSCP	Rodent burrows in sparse grassland, desert, and agricultural habitats	Moderate
golden eagle *(Aquila chrysaetos)*	BGEPA, FP, S3, G5, MSCP	Forage in grassy and open shrub habitats; nest primarily on cliffs, secondarily in large trees	Moderate

Species	Status[1]	Habitat	Potential to Occur in the Project Area
coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*)	SSC, S3, G5T2Q, MSCP	Nests almost exclusively in prickly pear and coastal cholla in coastal sage scrub	Absent
Northern harrier *Circus cyaneus*	SSC, S3, G5, MSCP	Meadows, grasslands, open rangelands, desert sinks, fresh and saltwater emergent wetlands	Moderate
White-tailed kite *Elanus leucurus*	FP	Open woodland, marshes, partially cleared lands and cultivated fields, mostly in lowland situations.	Low
California horned lark (*Eremophila alpestris actia*)	WL, S3, G53TQ	Sparsely vegetated open terrain in a variety of habitats	Low
yellow-breasted chat (*Icteria virens*)	SSC, S3, G5	Dense thickets, brush, and secondary growth	Absent
coastal California gnatcatcher (*Polioptila californica californica*)	FT, G3T2, S2, SSC, MSCP	Coastal sage scrub/chaparral	Moderate[2]
least Bell's vireo (*Vireo bellii pusillus*)	FE, SE, S2, G5T2, MSCP	Nests in mesquite, willows, and mule fat in low riparian areas close to water or dry riverbeds	Low
Mammals			
northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*)	SSC, S2S3, G5T3	Sparse, low desert shrub lands to dense, high coastal sage scrub vegetation	Low
western mastiff bat (*Eumops perotis californicus*)	SSC, S3?, G5T4, WBWG-H	Roosts are often found under large exfoliating slabs of granite, sandstone slabs or in columnar basalt, on cliff faces or in crevices of large boulders and buildings generally high above ground	Absent
western red bat (*Lasiurus xanthinus*)	SSC, S3?, G5, WBWG-H	Roosts alone generally in foliage of trees and shrubs in riparian areas	Low
San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)	SSC, S3?, G5T3?	Coastal sage scrub and grassland	Low
western small-footed myotis (*Myotis ciliolabrum*)	S2S3, G5, WBWG-M	Roosts alone or in small groups in cliff and rock crevices, buildings, concrete overpasses, caves, and mines in variety of habitats	Absent
Yuma myotis (*Myotis yumanensis*)	S4?, G5, WBWG-L	Roosts in bridges, buildings, cliff crevices, caves, mines, and trees in a wide variety of habitats	Absent
San Diego desert woodrat (*Neotoma lepida intermedia*)	SSC, S3?, G5T3?	Coastal scrub with an abundance of rock outcrops, rocky cliffs, and slopes and moderate to dense vegetation canopies	Absent

Species	Status[1]	Habitat	Potential to Occur in the Project Area
pocketed free-tailed bat (*Nyctinomops femorosaccus*)	SSC, S2S3, G4, WBWG-M	Roosts in colonies in crevices of rugged cliffs, high rocky outcrops, slopes, and buildings near large open water sources in a variety of habitats	Absent
American badger (*Taxidea taxus*)	SSC, S4, G5, MSCP	variety of open, arid habitats, but are most commonly associated with grasslands, savannas, mountain meadows, and open areas of desert scrub with friable soils	Low

[1] **Status Legend**

Federal FC= Candidate species for listing
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

State SSC = California Species of Special Concern - Species of concern to CDFG because of declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction
FP = State fully protected
SE = State listed as endangered
ST = State listed as threatened
WL = State watch list

Local MSCP = County of San Diego Multiple Species Conservation Plan covered species

Western Bat Working Group

WBWG-H = High Priority: are imperiled or are at high risk of imperilment based on available information on distribution, status, ecology and known threats
WBWG-MH = Medium-High Priority: lack of adequate data to assess species' status and indicates the need for closer evaluation, research and conservation actions
WBWG-M = Medium Priority: medium risk of imperilment based on available information on distribution, status, ecology and known threats

California Native Plant Society Rare Plant Rank (RPR)

List 1B = Rare, threatened, or endangered in California and elsewhere
List 2 = Rare, threatened, or endangered in California but more common elsewhere
List 3 = Plants which need more information
List 4 = Limited distribution – a watch list
List 1A = Presumed extinct because they have not been seen or collected in the wild in California for many years. This list also includes plants which are presumed extirpated

Threat Rank
0.1 = Seriously threatened in California (high degree/immediacy of threat)
0.2 = Fairly threatened in California (moderate degree/immediacy of threat)
0.3 = Not very threatened in California (low degree/immediacy of threats or no current threats known)

Global Rank/State Rank

Global rank (G-rank) and State rank (S-rank) is a reflection of the overall condition of an element throughout its global (or State) range. Subspecies are denoted by a T-rank; multiple rankings indicate a range of values. State rank (S-rank) is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank. An H-rank indicates that all sites are historical.
G1 or S1 = Critically imperiled – At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
G2 or S2 = Imperiled – At high risk of extinction or elimination due to very restricted range, very few populations, steep declines, or other factors.
G3 or S3 = Vulnerable – At moderate risk of extinction or elimination due to a restricted range, relatively few populations, recent and widespread declines, or other factors.
G4 or S4 = Apparently Secure – Uncommon but not rare; some cause for long-term concern due to declines or other factors.
G5 or S5 = Secure – Common; widespread and abundant.
G#G# and S#S# = Range Rank is used to indicate the range of uncertainty about the exact status of a taxon or ecosystem type.
Q = Questionable taxonomy that may reduce conservation priority.
H = Possibly extinct
? = Inexact numeric rank
T# = Infraspecific taxon refer to subspecies, varieties and other designations below the level of species.

[2] These species are analyzed in the indirect impacts section of this PSA despite not occurring in the area of direct impact.

‡**Definitions Regarding Potential Occurrence:**

Present:	Species or sign of its presence observed on the site
High:	Species or sign not observed on the site, but reasonably certain to occur on the site
Moderate:	Species or sign not observed on the site, but conditions suitable for occurrence
Low:	Species or sign not observed on the site, conditions marginal for occurrence
Absent:	Species or sign not observed on the site, conditions unsuitable for occurrence

Special-Status Plants

San Diego marsh-elder (*Iva hayesiana;* RPR 2.2) was detected during surveys of the project area (PPEC 2011a). A small population was detected within the unnamed drainage in the area held in conservation easement located along Transmission Line Route B. Special-status plant surveys conducted in November 2010 did not identify any other special-status plants in the project area; however, these surveys were not conducted during the known blooming period for most special-status plant species potentially occurring in the project area. With the exception of purple stemodia (*Stemodia durantifolia*), which does not have the potential to occur in the project area, the blooming period was missed for 25 of the special-status plants listed in **Biological Resources Table 2** that may occur onsite. Species identified as occurring in valley and foothill grassland as well as coastal scrub have the potential to occur in the project area, specifically along Transmission Line Route B. In addition, critical habitat for Otay tarplant is located along Transmission Line Route B. Although the vegetation community identified along Transmission Line Route B was defined as non-native grassland, this habitat type has replaced native grassland and coastal sage scrub and many locations throughout Southern California so special-status plants occurring in these habitat types still have the potential to occur in non-native grassland. Had the surveys been conducted between April and June, depending on yearly weather conditions, the blooming period for all the special-status plants would have been covered and it could have been determined whether these species occurred in the project area. Survey results provided by the applicant are not adequate to assess presence or absence of special-status plants within the project area. Staff requests that focused rare plant surveys be conducted in 2012 and the results submitted as soon as possible.

San Diego marsh-elder (California Rare Plant Rank 2.2)

San Diego marsh-elder is found from Los Angeles to San Diego counties within the United States, and northern Baja California within Mexico. San Diego marsh-elder is a woody perennial that is found in alkaline soils within playas as well as marshes and swamps below 1,000 feet in elevation and blooms from April to October. Decline of this species and its loss of habitat are attributed to waterway channelization, coastal development, vehicles, and non-native plants.

There are 10 CNDDB occurrences of San Diego marsh-elder within 5 miles of the project area; the closest record is located approximately 0.5 mile northeast of the project site (CNDDB 2011). There is no suitable habitat for this species within the power plant site or laydown area; however, there is habitat along the proposed Transmission Line Route B. A small population was detected during surveys within the drainage located near the proposed Transmission Line Route B.

Otay tarplant (Federal Threatened, State Endangered, MSCP-covered species)

Otay tarplant is found in southwest San Diego County within the United States, and northern Baja California within Mexico. Otay tarplant is an annual plant which grows on clay soils within coastal scrub and valley and foothill grassland at elevations from 80 up to 1,000 feet and blooms from May to June. Decline of this species is attributed to ongoing loss and degradation of suitable habitat and fragmentation of remaining populations (USFWS 2004). Loss of suitable habitat has occurred though its range as a result of urban development and agricultural activities, invasion and competition from invasive non-native species, and habitat fragmentation and degradation.

There are 10 CNDDB occurrences of Otay tarplant within 5 miles of the project area; the closest record is located approximately 0.25 mile southeast of the project site (CNDDB 2011). There is no suitable habitat for this species within the power plant site or laydown area; however, there is marginally suitable habitat along the proposed Transmission Line Route B. Critical Habitat Unit 3C occurs east of the project site along a portion of Transmission Route B, although the species was not observed here.

Special-Status Wildlife

Quino checkerspot butterfly (Federal Endangered)

Quino checkerspot butterfly is a subspecies of the Edith's checkerspot butterfly currently known only from western Riverside County, southern San Diego County and northern Baja California, Mexico. The life cycle includes one, or rarely two, generations, of adults per year (USFWS 2003). The adult's flight period lasts for a four to six week period beginning from late January to early March and continuing to early May depending on weather conditions. Females begin egg laying upon emergence as adults from pupae and lay one to two egg clusters per day for most of their adult life. Adults live from 10 to 14 days. Larvae hatch within 10 to 14 days after egg deposition by adults. The eggs are laid on a primary host plant upon which the larvae feed or may move to another host plant of the same species to feed or another host plant species (secondary host plant) when primary host plants become inedible. The larvae may re-enter diapause (physiological state of dormancy) if conditions are poor and reemerge in November or December after sufficient rainfall. The most commonly used primary host plant is the native plantain (*Plantago erecta*); however, white snapdragaon (*Antirrhinum coulterianum*) is also an important primary host plant. Wooly plantain (*Plantago patagonicais*) and thread-leaved bird's-beak (*Cordylanthus rigidus*) have also been documented as primary host plants. Secondary host plants include purple owl's-clover (*Castilleja exserta*).

The range of this species has been reduced by over 95% (USFWS 2003). The reasons for decline and current threats to this species include urban and agricultural development, invasion by non-native plant species, off-road vehicle use, grazing, and fire management practices. Other ongoing factors that contribute to the decline of the species include enhanced nitrogen deposition, elevated atmospheric carbon dioxide concentrations, and climate change (USFWS 2003).

There are 12 CNDDB occurrences of Quino checkerspot butterfly within 5 miles of the project area; the closest record is located 0.5 mile southeast of the project site (CDFG

2011). USFWS Critical Habitat Unit 8 occurs immediately adjacent to proposed Transmission Line Route B. There is no suitable habitat for this species within the project site based on a habitat assessment conducted by the applicant on March 11, 2011 and no Quino checkerspot host plants were detected within the project area, but a single host plant, native plantain (*Plantago erecta*), was identified approximately 1,600 feet northeast of the project footprint (PPEC 2011d). All areas within the project study area were determined by the applicant to be excluded areas[1] during the site assessment and no butterfly surveys were conducted. However, as Quino checkerspot butterfly have been detected in the non-native grassland immediately east of the project study area, it is not accurate to state that all areas within the study area are classified as excluded areas, including areas classified as non-native grasslands (Porter 2011c). Since the applicant will be required to avoid all potential Quino checkerspot butterfly habitat by installing linear facilities within existing road rights-of-way, no Quino checkerspot butterfly surveys are necessary as direct impacts to habitat will be avoided.

Golden eagle (Bald and Golden Eagle Protection Act, State Fully Protected)

The golden eagle forages in grasslands or open agricultural lands, which occur adjacent to the project site and portions of the transmission line routes. Suitable nesting habitat for golden eagle includes cliffs of all heights and large trees in open areas (Zeiner et al.1990). There is one CNDDB occurrence for golden eagle within 10 miles of the project site. A single nesting record from 1991 is located approximately eight miles east of the project area in the San Ysidro Mountains. This species was detected foraging in grasslands west and southeast of the PPEC site during surveys conducted for the OMGP in 1999. However, this species was not detected during biological surveys of the PPEC project area. The project site does not contain foraging or nesting habitat for this species; however, foraging habitat is located adjacent to the PPEC site and linears.

Northern harrier (California Species of Special Concern, MSCP covered species)

Northern harriers forage in grasslands or open agricultural lands and nest on the ground in shrubby vegetation, usually near a marsh edge (Zeiner et al.1990). There is one CNDDB occurrence for northern harrier located approximately 10 miles east of the project site. This species was detected during surveys conducted for the OMGP in 1999. However, this species was not detected during biological surveys of the PPEC project area. The project site does not contain foraging or nesting habitat for this species, however foraging and nesting habitat is located adjacent to the PPEC site and linears.

Western Burrowing Owl (California Species of Special Concern, MSCP covered species)

The burrowing owl is a yearlong resident of open, dry grassland, prairie, or desert floor habitats. Burrowing owls may be diurnal (active during day), crepuscular (active during dawn and dusk), or nocturnal (active at night), although hunting typically occurs at night. The burrowing owl is known to occur in urban, disturbed areas, and at the edges of

[1] Excluded areas are defined as 1) orchards, developed areas, or small in-fill parcels (plots smaller than an acre completely surrounded by urban development) largely dominated by non-native vegetation; 2) active/in-use agricultural fields without natural or remnant inclusions of native vegetation (i.e., fields completely without any fallow sections, unplowed areas, and/or rocky outcrops); or 3) closed-canopy forests or riparian areas, dense chaparral, and small openings (less than an acre) completely enclosed within dense chaparral (USFWS 2002).

agricultural fields, and typically hunts from a perch or hops after prey on the ground. It typically nests in the vacant burrow of a ground squirrel or other small mammal although it is also known to occupy manmade structures including culverts, pipes, nest boxes, and piles of debris (CDFG 1995). The nesting season, as recognized by the California Burrowing Owl Consortium (CBOC 1993), is from February 1 through August 31.

There are 12 CNDDB occurrences of western burrowing owl within 5 miles of the project area; the closest record is located less than 0.5 mile south of the PPEC site (CNDDB 2011). Surveys of the project site and laydown area plus a 150-meter buffer were completed in March 2011 by the landowner as a condition of the grading permit (L-15555) issued to the landowner prior to grading. Surveys were conducted according to the protocol issued by the California Burrowing Owl Consortium (CBOC 1993) and no observations or sign of burrowing owl presence was observed. There are several known western burrowing owl CNDDB occurrences along Gas Line Routes A and B, including an occurrence located along Modified Gas Line Route A (CDFG 2011). However, these occurrences no longer exist likely due to frequent grading. There is no suitable habitat for this species within the project site; however, suitable habitat is located along the Transmission Line Route B and adjacent to the Gas Line Routes A and B. Although this species was not observed during surveys for the proposed project, the ruderal grasslands adjacent to the proposed project site and linears support prey for this species including insects, small mammals, lizards, and other birds. In addition, ground squirrels were detected during surveys and any burrows located along the transmission line or gas line routes could provide suitable nesting opportunities for burrowing owl.

Coastal California Gnatcatcher (Federal Threatened, California Species of Special Concern, MSCP covered species)

The coastal California gnatcatcher is a year-long resident of scrub dominated plant communities and is strongly associated with various successional stages of sage scrub habitat. It is found from southern Ventura County southward through Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties, California and into Baja California, Mexico. Coastal California gnatcatchers also associated with chaparral, grassland, and riparian plant communities when adjacent to or intermixed with sage scrub habitat. The nesting season for this species extends from about February 15 through August 30, with peak activity occurring from mid-March through mid-May. The primary threat to the species includes urban and agricultural development, wildland fire, and habitat type conversion caused by the presence of non-native plants, atmospheric pollution, and anthropogenic disturbance (USFWS 2009). Other threats include climate change, which could increase the likelihood of droughts and wildland fire.

There are 13 CNDDB occurrences for California gnatcatcher within 5 miles of the project area; the closest record is located approximately 0.35 mile northeast of the project site (CNDDB 2011). No observations of California gnatcatcher were recorded during biological resource surveys of the proposed project site (PPEC 2011h). There is no suitable habitat for this species within the project site; however marginal habitat is located along Transmission Line Route B including the drainage area recorded as a conservation easement. A parcel of USFWS Critical Habitat Unit 1 for this species is located less than 0.25 mile east of the proposed PPEC site.

Sensitive Habitat

Critical Habitat

Critical habitat is a formal designation under the federal Endangered Species Act. It is a specific area designated as essential to the conservation and recovery of a federally listed species. These areas may require special management consideration or protection. Critical habitat for seven federally listed species occurs within 5 miles of the project area. This includes critical habitat for spreading navarretia (*Navarretia fossalis*), Otay tarplant (*Deinandra conjugens*), Mexican flannelbush (*Fremontodendron mexicanum*), Quino checkerspot butterfly (*Euphydryas editha quino*), Riverside fairy shrimp (*Streptocephalus woottoni*), San Diego fairy shrimp (*Branchinecta sandiegonensis*), and California gnatcatcher (*Polioptila californica*). **BIOLOGICAL RESOURCES Figure 1**, at the end of this PSA section, illustrates the location of critical habitat in relation to the proposed project.

Sensitive Aquatic Habitat

Waters of the U.S. are defined as traditional navigable waters; interstate waters; wetlands adjacent to either traditional navigable waters or interstate waters; non-navigable tributaries to traditional navigable waters that are relatively permanent, meaning they contain water at least seasonally; and wetlands that directly abut relatively permanent waters as well as waters that are determined to have a significant nexus to a traditional navigable water or interstate water. The significant nexus of a water is determined by the USACE on a case by case basis. Waters of the State are regulated through Section 401 of the Clean Water Act and are defined more broadly than Waters of the U.S. Waters of the State include any surface water or groundwater, including saline waters, within the boundaries of the state, whether private or public, including waters in both natural and artificial channels.

A wetland delineation was conducted by the applicant on December 6, 2010 and May 18, 2011. The Preliminary Jurisdictional Determination Report (PPEC 2011h) identified seven features located within the project study area (project disturbance area plus 500-foot buffer) that are considered potential USACE Waters of the U.S.; of these features, all seven are also identified as Waters of the State. Most of these features are stormwater drainages in ruderal habitat dominated by non-native vegetation. However, one of the features along Transmission Line Route B is a drainage within an area protected by a conservation easement for biological resources. This drainage supports riparian and wetland vegetation including willows (*Salix lasiolepis* and *S. exigua*), southern cattatil (*Typha domingensis*), and curley dock (*Rumex crispus*). The total acreage for potentially jurisdictional Other Waters and Waters of the State is 4.15 acres.

Conservation Easements

There are several areas recorded as conservation easements located within the proposed Transmission Line Route B corridor. The conservation easements recorded in favor of the County of San Diego include three easements set aside for wildlife and habitat values, one easement set aside for archeological conservation, and two easements set aside as fire buffers. The biological conservation easements are for the protection of federal and state jurisdictional wetlands, federal waters of the U.S, and non-native grasslands. Non-native grasslands are a Tier III habitat that is required to be

mitigated for under the MSCP Subarea Plan. Per the easement recorded in favor of the County of San Diego, the following are prohibited within the easement: grading, excavation, placement of soil, sand, rock, gravel, or other material, razing, clearing of vegetation, construction, erection or placement of any building or structure, vehicular activities, trash dumping, use of herbicides, rodenticides, weed abatement activities, otherwise altering the generally topography or the property, including building or roads, removing, destroying or cutting or trees or other vegetation except as required by law for fire breaks or use for any purpose other than open space.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

A significant impact is defined under the California Environmental Quality Act (CEQA) as "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project" (Cal Code Regs. tit. 14, [hereinafter CEQA Guidelines] section 15382). Thresholds for determining significance in this section are based on Appendix G of the CEQA Guidelines (CCR 2006) and performance standards or thresholds identified by the Energy Commission staff.

The proposed project would have a significant impact to biological resources, if it would:

- Have an adverse impact, either directly through take, or indirectly through habitat modification or interruption of migration corridors, on any state- or federally-listed species;
- Have an indirect or direct adverse effect on any sensitive natural community identified in federal, state or local plans, policies, or regulations;
- Interfere with the movement of any native wildlife species (resident or migratory) or with established native wildlife (resident or migratory) corridors; or
- Conflict with applicable federal, state, or local laws, ordinances, regulations, and standards protecting biological resources, as listed in **Biological Resources Table 1**.

DIRECT AND INDIRECT IMPACTS AND MITIGATION

CEQA Guidelines define "direct" impacts as those impacts that result from the project and occur at the same time and place. Indirect impacts are caused by the project, but can occur later in time or farther removed in distance and are still reasonably foreseeable and related to the operation of the project.

This section analyzes the potential for direct and indirect impacts of construction and operation of the proposed project to biological resources and provides mitigation, as necessary, to reduce the severity of potentially adverse impacts.

General Impact Avoidance and Minimization Measures

In order to avoid or minimize potentially adverse impacts to biological resources, staff recommends that a Designated Biologist and Biological Monitor(s) be employed to ensure impact avoidance and minimization measures described below and protection of

sensitive biological resources described above are implemented. Selection criteria and minimum qualifications of the Designated Biologist and Biological Monitor(s) (such as an appropriate degree and/or field experience) are described in staff's proposed Conditions of Certification **BIO-1** (Designated Biologist Selection) and **BIO-3** (Biological Monitor Qualifications). The Designated Biologist and Biological Monitor, their duties (such as required presence on-site and involvement in preparing plans and reports), and authority (including the authority to halt project activities under certain circumstances) are described in staff's proposed Conditions of Certification **BIO-2** (Designated Biologist Duties) and **BIO-4** (Designated Biologist and Biological Monitor Authority), respectively. The Designated Biologist and/or Biological Monitor would be responsible, in part, for developing and implementing the Worker Environmental Awareness Program (WEAP) (see Condition of Certification **BIO-5**), which is a mechanism for training the workers on why it is important to protect the sensitive biological resources described in this analysis that are known or could potentially occur in the project area.

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

Staff's proposed Condition of Certification **BIO-7** (General Impact Avoidance and Minimization Measures), describes general measures to be in place throughout project construction to avoid and minimize impacts to biological resources from the proposed project during site mobilization, ground disturbance, grading, construction, operation, maintenance, and closure.

The applicant has proposed several measures that relate to the Designated Biologist duties, the WEAP, and general impact avoidance, minimization, and mitigation measures (PPEC 2011a). These include biological monitors and requirements for their presence on site during sensitive work; protecting wetlands and other waterways from sediment and other pollutants; dust control; protections for special-status species; and an on-site construction personnel environmental awareness program. Staff agrees with many of these proposals, and, where appropriate, has incorporated these items into staff's proposed conditions of certification.

Construction-Related Impacts and Mitigation

Construction Impacts to General Vegetation

Construction impacts to vegetation could occur through the direct removal of plants during construction, trimming of vegetation for access, or crushing by heavy equipment. As these impacts are generally localized and are primarily temporary, they are not usually considered significant unless the habitat type is regionally unique or is known to support special-status species. The proposed project site would result in the permanent disturbance of approximately 10 acres. This area has been recently graded and development of the proposed project would not result in any impacts to native

vegetation. The row of trees along the eastern border of the PPEC site and the southern border of the adjacent Otay Mesa Generating Project (OMGP) is primarily non-native ornamental trees such as red ironbark (*Eucalyptus sideroxylon*) and New Zealand flax (*Phorium tenax*). None of these trees along the eastern border of PPEC are planned for removal and would be protected by wildlife exclusion fencing for the duration of construction. However, trees along the south border of the OMGP may be removed to install Transmission Line Route B. There are no specific ordinances regarding protected trees within the County of San Diego that would apply to this project (Gungle 2011).

Construction of the proposed project would not result in substantial loss of native vegetation or a regionally unique habitat type; any temporary or permanent impacts to general vegetation would be less than significant. In addition, the landowner has previously mitigated for direct impacts to vegetation communities within the PPEC project area based on the mitigation ratios set forth in the MSCP Minor Amendment. The landowner satisfied the requirements of the MSCP Minor Amendment, in part, by purchasing 23 acres to compensate for the loss of 46 acres of Tier III habitat required for development of the Otay Mesa Generating Project parcel and an additional 15.16 acres required for the loss of Tier III habitat resulting from subdivision of the remaining parcels (USFWS 2001). No further habitat compensation is required for the PPEC project as part of the MSCP Minor Amendment (Ehsan 2011).

Construction Impacts to General Wildlife

Direct loss of small mammals, reptiles, and other less mobile species could occur during construction of the proposed project. This would result primarily from the use of construction vehicles and equipment at the PPEC site. Small burrowing animals (lizards, snakes, and small mammals) could be harmed through crushing of burrows, loss of refugia from predators, and direct mortality from construction activities. Construction activities and human presence could also alter or disrupt breeding and foraging habitats and activities for common wildlife species.

Construction activities during the nesting season could adversely affect breeding birds through direct mortality or indirectly through disruption or harassment. The applicant proposes to conduct vegetation clearing outside the typical breeding season for nesting birds (February 1 to August 31); if this is not possible, the applicant would conduct breeding bird surveys and submit reports prior to each phase of construction and maintain minimum buffer zones for the duration of ground-disturbing activities, should breeding birds be discovered (PPEC 2011a). Staff has incorporated this applicant-proposed measure into Condition of Certification **BIO-8** (Pre-Construction Nest Surveys and Impact Avoidance and Minimization Measures for Breeding Birds), which provides additional detail on survey timing and recommendations to avoid disturbance to active nests and ensure compliance with the Migratory Bird Treaty Act. With implementation of Condition of Certification **BIO-8**, significant impacts to nesting birds would not result from proposed project construction activities.

The drainage area, held in conservation easement, located near the proposed alternative Transmission Line Route B provides suitable foraging habitat for several bird species, including small passerines. Construction activities near the drainage, including placement of poles and stringing of line may result in indirect water quality impacts (i.e.,

project-related erosion, sedimentation, or contamination from construction materials or equipment) to the habitat and wildlife species potentially occurring therein. The applicant proposed several impact avoidance and minimization measures, which staff has determined are adequate to reduce potential impacts to biological resources at the drainage to less than significant. These measures include clearly delineating environmentally sensitive areas, using a biological monitor, prohibiting construction discharges into surface waters, installing erosion control measures, and complying with best management practices. These measures from Supplemental Responses to Data Requests Relating to Biological Resources (PPEC 2011o) and Supplemental Responses to Data Requests Relating to Water Resources, Visual Resources, and Biological Resources (PPEC 2011p) are incorporated by reference into staff's proposed Condition of Certification **BIO-6**. See also **Storm Water Runoff** section below for measures related to appropriate soil erosion and sediment controls that will be implemented on-site to prevent construction materials and/or eroded soils from entering aquatic resources**.**

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

Construction Impacts to Special-Status Plant Species

Project construction would occur entirely within previously disturbed areas or in ruderal uplands that were determined to not support special-status plants with the exception of marginally suitable habitat along Transmission Line Route B, particularly near areas held in biological conservation easement. One special-status plant, San Diego marsh elder (*Iva hayesiana*), was detected during applicant surveys within the unnamed drainage, in the area held in conservation easement, located along Transmission Line Route B. However, surveys were not conducted during the appropriate blooming season to identify most rare plants. Limiting offsite disturbance, as proposed in Condition of Certification **BIO-7** would prevent impacts to special-status plant populations occurring or potentially occurring along Transmission Line Route B. In order to avoid and minimize impacts to special-status plants and to identify any species not adequately targeted in previous surveys, staff proposes preconstruction surveys during the appropriate blooming period for all special-status plants with a low to moderate potential to occur and implementation of impact avoidance and minimization measures including using establishing avoidance buffers if special-status plant populations are detected in an area of impact. Because the project is located in a Minor Amendment area, take is authorized for any special-status plant species covered under the MSCP. However, not all special-status plant species potentially occurring in the project area are covered under the MSCP. If special-status plant species that are not covered under the MCSP are identified during focused surveys, the applicant would be required to construct Transmission Line Route A as described in Condition of Certification **BIO-9** (Special-Status Plant Pre-construction Surveys and Avoidance and Minimization Measures). Implementation of Condition of Certification **BIO-9** would reduce impacts to

special-status plants to less than significant levels. Staff requests that focused rare plant surveys be conducted in 2012, potentially prior to the Commission Decision, and the results submitted as soon as possible.

Construction Impacts to Special-Status Wildlife

Direct impacts to special-status wildlife from proposed project construction would include individual mortality from vehicles and equipment and displacement (avoidance of an area and modified behavior due to construction activities). Potentially affected special-status wildlife species include burrowing owl, California gnatcatcher, golden eagle and northern harrier.

Northern harrier breeding in the grasslands adjacent to the PPEC project site and linears could be disturbed during construction and may be subjected to ongoing disturbance from operation and maintenance activities. Staff's proposed Condition of Certification **BIO-7** limits offsite disturbance. Staff's proposed Condition of Certification **BIO-8** outlines impact minimization and avoidance measures to avoid construction impacts to nesting special-status birds, including northern harrier. With implementation of these conditions impacts to nesting birds would be less than significant.

Northern harriers as well as golden eagles and burrowing owls foraging in the grasslands adjacent to the PPEC could be disturbed or displaced by noise and elevated human activity during construction. No foraging habitat would be lost as a result of proposed project development. Due to the existing level of disturbance in the project area the additional disturbance to foraging northern harriers, golden eagle, and burrowing owl from PPEC construction would be less than significant.

Burrowing owl burrows along the Transmission Line Route B corridor would likely be destroyed or be otherwise indirectly impacted by construction noise and dust. Burrows located adjacent to the natural gas line route could be indirectly impacted by construction noise and dust, as well. Animals occupying those burrows, both within and adjacent to impacted areas could be disturbed or harmed during construction and may be subjected to ongoing impacts related to maintenance activities after construction is completed. Staff's proposed Condition of Certification **BIO-10** (Western Burrowing Owl Impact Avoidance and Minimization Measures) outlines impact minimization and avoidance measures to avoid construction impacts to western burrowing owl that are based on the County of San Diego Biological Mitigation Ordinance (CSD 2010b). Since the project site has been previously disturbed, pre-grading surveys, as described in Section 3.4 of the Strategy to Mitigate Impacts to Burrowing Owls in the Unincorporated County, would be required instead of the full protocol survey per the County of San Diego Biological Survey and Report Requirements (Bilodeau pers. comm. 2011, CSD 2010); this requirement is also encompassed in Condition of Certification **BIO-10**. With implementation of Condition of Certification **BIO-10**, impacts to burrowing owl would be less than significant.

The portion of drainage area along Transmission Line Route B provides marginal breeding habitat for California gnatcatcher. Based on the information provided by the applicant to date, it is unclear whether vegetation removal or ground disturbance is proposed in this area. These activities in the drainage could result in mortality of

California gnatcatcher. Indirect impacts to California gnatcatcher from construction noise or elevated human presence include disruption or harassment, which could result in nest abandonment. Condition of Certification **BIO-11** (Transmission Line Route B Alternative Impact Avoidance Measures) prohibits any impacts to the conservation easement, including vegetation removal and ground disturbance; implementation of this condition would avoid direct impacts to California gnatcatcher. Staff's proposed Condition of Certification **BIO-12** (California Gnatcatcher Impact Avoidance and Minimization Measures) outlines impact minimization and avoidance measures to avoid indirect construction impacts to nesting California gnatcatcher; these include pre-construction surveys, installation of exclusion fencing along the drainage, and establishment of no-disturbance buffers around excluded areas during the breeding season. With implementation of conditions of certification **BIO-11** and **BIO-12**, impacts to California gnatcatcher would be less than significant.

The applicant proposed several impact avoidance and minimization measures, which staff has determined would reduce potential impacts to special-status wildlife. These measures include conducting pre-construction surveys and delineating species-specific avoidance buffers. Applicant-proposed impact avoidance and minimization measures along with staff's proposed conditions of certification would avoid impacts to special-status wildlife or mitigate them to less than significant levels.

As the project parcels are located in Minor Amendment Area, the County of San Diego MSCP South County Subarea Plan would provide take authorization for covered species including: northern harrier, golden eagle, western burrowing owl, and California gnatcatcher. CDFG and USFWS granted conditional concurrence in 2001 and the applicant submitted the required documentation that satisfied these conditions and the site was considered take authorized under the MSCP and development was allowed. The Minor Amendment agreement covers the project parcels, including the project site, laydown area, and transmission line routes and no future projects need to purchase more land as mitigation for development on these parcels (CSD 2001).

Construction Impacts to Jurisdictional Wetlands and Waters

It is anticipated that project construction will not cause loss or fill of any wetlands or other waters that are potentially Waters of the U.S. or Waters of the State, as construction would avoid the potentially jurisdictional drainage held in conservation easement. **BIO-11** also requires complete avoidance of conservation easements, which would include the potentially jurisdictional drainage therein. CDFG has determined that a Streambed Alteration Agreement is not required (Lucas 2011a). The applicant submitted the Preliminary Jurisdictional Determination Report to the USACE South Coast Branch on August 10, 2011. USACE conducted a site visit to verify whether potentially USACE-jurisdictional waters would be impacted by the project (Santulli 2011). USACE is expected to issue a letter with a Preliminary Jurisdictional Determination that impacts to federally jurisdictional resources would be avoided.

General Construction Impacts

Construction activities, including noise and lighting impacts, have the potential to create a variety of temporary impacts to biological resources.

Noise

According to the AFC (PPEC 2011a), construction activities would typically occur between 7:00 a.m. and 5:30 p.m. and would result in a short-term, temporary increase in the ambient noise level. The PPEC site is located in an area already occupied by other industrial uses including the existing OMGP. The primary noise source in the project area is the existing OMGP. The OMGP and traffic on Alta Road create elevated ambient noise levels to which most local wildlife species have acclimated. However, excessive construction noise has the potential to disrupt the nesting, roosting, or foraging activities of sensitive wildlife, especially wildlife located in the drainage area held in conservation easement, adjacent to the Transmission Line Route B and approximately 1,000 feet east of the PPEC site border. The San Ysidro Mountains are another sensitive area that supports diverse wildlife and are located approximately 2,000 feet east of the PPEC site border.

A maximum construction noise level from site clearing and grading of approximately 89 dBA Leq would occur at a distance of 50 feet from the acoustic center of the construction activity (most often the power block) and attenuate to approximately 63 dBA Leq at a distance of 1,000 feet from the source (PPEC 2011t) The drainage area held in conservation easement is located approximately 1,300 feet from the center of construction activity. Construction noise levels are predicted to be 75 dBA at the edge of the proposed project site (PPEC 2011a). Pile driving operations are not planned; site clearing would generate the highest noise levels associated with construction of the plant facility. Site clearing and grading would last for two months. Baseline ambient noise levels in the project area, including at the drainage area held in conservation easement are between 59 and 64 dBA.

Studies have shown that noise levels over 60 A-weighted decibels (dBA) can affect the behavior of certain bird species (Dooling and Popper 2007). In addition, 60 dBA has been used by the USFWS and the Energy Commission as a reference point for evaluating noise impacts on wildlife (CEC 2002; CEC 2003).

To minimize noise impacts to breeding birds, including special-status birds such as burrowing owl and California gnatcatcher, potentially nesting in the row of eucalyptus trees east of the project, other ornamental trees surrounding the OMGP, ruderal areas along linear routes, and at the drainage area held in conservation easement, staff recommends Condition of Certification **BIO-8**. Condition **BIO-8** would require a qualified biologist to monitor any bird nest locations exposed to excessive construction noise until the biologist determines that nestlings have fledged. Activities that might disturb nesting activities (e.g., excessive noise above 60 dBA), would be prohibited within the buffer zone until such a determination is made. Buffer zones could range from 250 feet to 500 feet based on the particular sensitivity of a species to disturbance and the location of the nest. Buffers smaller than 250 feet may be acceptable depending on the species, but not likely for California gnatcatcher. With implementation of **BIO-8**, impacts to nesting birds from proposed project construction noise would be less than significant. For a complete analysis of construction noise impacts, refer to the **Noise and Vibration** section of this Preliminary Staff Assessment.

Lighting

As stated above, project construction activities are planned to occur between 7:00 a.m. and 5:30 p.m. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities. During some construction periods and during the startup phase of the project, some activities may continue 24 hours per day, 7 days per week. Bright lighting at night could disturb the resting, foraging, or mating activities of wildlife and make wildlife more visible to predators. Also, night lighting could be disorienting to migratory birds and, if placed on tall structures, may increase the likelihood of collision with project features, as discussed below. Existing operations at the adjacent OMGP and the SDG&E Otay Mesa Switchyard and nearby industrial areas as well as traffic on Alta Road provide an elevated ambient level of lighting to which some local wildlife species have acclimated.

The following applicant-proposed impact avoidance and minimization measures pertain to project lighting (PPEC 2011a; pp. 5.13-26):

- External lighting shall incorporate commercially available fixture hoods and shielding that direct light downward or toward the area to be illuminated.
- Light fixtures shall not cause obtrusive spill light beyond the project boundary.
- All lighting shall be of minimum necessary brightness consistent with operational safety and security.
- Direct lighting shall not illuminate the nighttime sky.

Implementation of these applicant-proposed measures would ensure that temporary and permanent construction lighting would not create substantial sources of new light. These measures are incorporated into staff's proposed Conditions of Certification **BIO-7** and **VIS-3** (see the **Visual Resources** section of the Preliminary Staff Assessment). In addition, staff recommends that lighting be specifically directed away from biologically sensitive areas (i.e., the areas recorded by the County of San Diego as conservation easements) (refer to Condition of Certification **BIO-7**). With implementation of these conditions, impacts to sensitive wildlife from increased night lighting during construction would not occur.

Storm Water Runoff

Construction activities near the drainage near Transmission Line Route B, including placement of poles and stringing of line, may result in indirect water quality impacts (i.e., project-related erosion, sedimentation, or contamination from construction materials or equipment) to the habitat and wildlife species potentially occurring therein. Storm water runoff from open areas on the PPEC site would be controlled during construction. In order to avoid impacts to any creeks, drainages, wetlands, or other aquatic resources in the proposed project area, a Storm Water Pollution Prevention Plan (SWPPP) will be implemented to control storm water during construction. The SWPPP will require implementation of best management practices (BMPs) such as stabilized construction entrances, silt fencing, berms, hay bales, and detention basins to control runoff from all construction areas. Sediment barriers such as straw bales or silt fences would be installed to slow runoff and trap sediment. Only certified weed free materials will be

used for erosion control. These measures are described in Condition of Certification **BIO-7**.

The project would not directly affect any creeks, drainages, wetlands, or other aquatic resources. Appropriate soil erosion and sediment controls will be implemented on-site and along all linear features to prevent construction materials and/or eroded soils from entering aquatic resources. Staff is proposing Conditions of Certification **SOIL & WATER-1** and **SOIL & WATER-2**, in which the applicant is required to develop and implement a site-specific Drainage, Erosion, and Sediment Control Plan (DESCP), and a construction SWPPP, respectively. In addition, the applicant would install wildlife exclusion fencing to protect the unnamed drainage, held as a conservation easement by San Diego County, in the vicinity of the transmission line corridor along proposed Transmission Line Route B (Condition of Certification **BIO-7**). With implementation of these measures potential project impacts to aquatic resources would be less than significant.

Conservation Easements

There are several areas recorded as conservation easements located within the proposed Transmission Line Route B corridor. The conservation easements recorded in favor of the County of San Diego include three easements set aside for wildlife and habitat values, one easement set aside for archeological conservation, and two easements set aside as fire buffers. The project owner has stated in the Applicant's Additional Responses to Staff's Informal Data Requests Regarding Biological Resources that construction of the transmission line (Route A or B) would not cause any ground disturbance to the areas held in conservation easement (PPEC 2011s). Furthermore, the line will be designed and located so that operation and maintenance of the line will not disturb any area held in conservation easement as delineated on the County Parcel Map (PM) 20473. The applicant has identified that an 80-foot wide right-of-way would be required for the transmission line route however the applicant did not delineate the right-of-way on any maps submitted. Per the easement terms, the 80-foot-right-of-way would not be allowed to lie within any area recorded as an easement based on PM 20473. These measures have been incorporated into staff's proposed conditions of certification **BIO-11** and **CUL-9** (see the **Cultural Resources** section of this Preliminary Staff Assessment).

Staff is awaiting the clarification regarding the figure submitted by the applicant on November 28, 2011 (PPEC 2011s) that depicts pole locations and construction staging/access areas in relation to all areas held in conservation easement. The figure does not identify the right-of-way width and it is unclear whether vegetation removal is proposed. The applicant will provide further information after the publication of the PSA. Regardless, implementation of conditions of certification **BIO-11** and **CUL-9** would avoid any disturbance within the conservation easements; impacts would be less than significant with implementation of these conditions.

Operation Impacts and Mitigation

Potential operation-related impacts include impacts to birds due to collision with and/or electrocution by the transmission lines, disturbance to wildlife due to increased noise

and lighting, storm water runoff, and indirect impacts to special-status species and their habitat from air emissions.

Avian Collision and Electrocution

Proposed project components that may present an electrocution and/or collision hazard to wildlife include exhaust stacks and transmission line support structures. The PPEC would construct three electricity generation units, each with an associated 100-foot-tall, 14.5-foot-diameter exhaust stack. The generated power would be transmitted either approximately 2,100 feet (Route A) or 2,650 feet (Route B) to SDG&E's Otay Mesa Switchyard via a new transmission corridor. The 230-kV electrical interconnection would include installation of up to three 65-foot tall tubular steel H-frame structures within the PPEC site and up to three 90-foot tall tubular steel tangent structures along either transmission line route. The existing Otay Mesa Generating Station located immediately east at a slightly higher elevation, has several tall generation and transmission structures, including two 131-foot-tall exhaust stacks.

Collision

Birds are known to collide with transmission lines, exhaust stacks, and other structures, causing mortality to the birds. 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 1994); aside from the drainage area held in conservation easement these features are not present near the proposed project area. The drainage area held in conservation easement is located south of the proposed Transmission Line Route B.

Birds could collide with the 100-foot tall PPEC stacks due to their proximity to open space in the surrounding area. The three proposed exhaust stacks, which would be the tallest component of the PPEC, would each be approximately 100 feet tall, and the two existing Otay Mesa Generating Station exhaust stacks are each 131 feet tall. Structures over 500 feet tall present a greater risk to migratory songbirds than shorter structures (Kerlinger 2000); bird mortality is significantly lower at towers shorter than 350 feet (Longcore et al. 2008). The proposed 230-kV transmission line H-frame structures would be 65-feet tall and the proposed tubular steel tangent poles would be 90-feet tall (PPEC 2011a). Because the project exhaust stacks and transmission lines would be significantly shorter than 350 feet tall, these proposed project features would pose a relatively low height-related collision risk to migrating birds. In addition, the transmission line routes will run parallel to the existing Otay Mesa Generating Station and would not be in the typical flight path of resident or migratory birds. Potential project impacts to resident or migratory bird populations would be less than significant.

Electrocution

Egrets, herons, raptors, and other large aerial perching birds, including those offered state and/or federal protection, are susceptible to transmission line electrocution if they

simultaneously contact 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/pole with insufficient clearance between these energized elements. The majority of bird electrocutions are caused by lines that are energized at voltage levels between 1-kV and 60-kV, and "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). The proposed PPEC transmission lines would be 230-kV; therefore, phase-to-phase and phase-to-ground clearances are expected to be sufficient to minimize bird electrocutions.

To avoid potential electrocution impacts, the applicant proposes to construct the transmission lines in accordance with Avian Powerline Interaction Committee guidelines specifically designed to reduce the risk of bird electrocution (PPEC 2011k). Staff agrees with this applicant-proposed impact avoidance and minimization measure and has incorporated it into staff's proposed Condition of Certification **BIO-7**. Specifically, the phase conductors shall be separated by a minimum of 60 inches and bird perch diverters and/or specifically designed avian protection materials should be used to cover electrical equipment where adequate separation is not feasible (APLIC 2006). With implementation of this condition, electrocution impacts to birds would not occur.

Operation Lighting

Several existing light sources are located in the vicinity of the proposed PPEC site, including industrial operations and the OMGS as well as traffic on Alta Road. A slight increase in light is expected to occur during operation of the PPEC. Under certain circumstances, lights can disorient migratory birds or bats flying at night or attract wildlife such as insects and insect-eaters. Implementation of applicant-proposed measures would ensure that operational lighting would not create substantial sources of new light. See **Lighting** section above under **General Construction Impacts** for a complete description of the applicant-proposed measures. These measures have been incorporated into staff's proposed Conditions of Certification **VIS-3** and **BIO-7** (see the **Visual Resources** section of this Preliminary Staff Assessment). Implementation of these conditions would ensure significant impacts to local wildlife from operation lighting would be avoided.

Operation Noise

The PPEC site is zoned as Heavy Industrial in the East Otay Mesa Business Park Specific Plan. It is located immediately adjacent to other energy facilities including the OMGS. In addition, the project site is immediately east of Alta Road which is a main access road to the Donovan State Prison and George F. Bailey Detention Facility. Therefore, it is likely that animals in this area have become habituated to an elevated ambient noise level. Operational noise levels of the plant would range from 68 dBA at the edge of the facility to 48 dBA at the edge of the study area which includes the project's proposed ground disturbance footprint and a 500-foot buffer. This would produce slightly elevated noise levels to baseline ambient; however species occurring near the project site are likely acclimated to an elevated level of noise. Staff concludes there would be no significant impact to biological resources by increased operational noise.

Storm Water Runoff

Storm water runoff from open areas on the PPEC project site that does not infiltrate the site would be conveyed through culverts and swales to an onsite detention basin. The grading and drainage facilities will be designed pursuant to County of San Diego requirements. BMPs will be implemented to reduce erosion and prevent silt from being discharged offsite. The site grading and drainage plan for the project includes a detention basin for on-site storm water storage which will be discharged to an existing storm water system. Storm water runoff would be conveyed in accordance with the National Pollutant Discharge Elimination System (NPDES) General Industrial Permit requirements. For more information on water quality impacts, refer to the **Soil and Water Resources** section of this Preliminary Staff Assessment.

The project would not affect any creeks, drainages, wetlands, or other aquatic resources. Appropriate soil erosion and sediment controls will be implemented on-site and along the linears to prevent materials and/or eroded soils from entering aquatic resources (especially the drainage within the conservation easement). Staff is proposing Conditions of Certification **SOIL & WATER-1** and **SOIL & WATER-3**, in which the applicant is required to develop and implement a site-specific Drainage, Erosion, and Sediment Control Plan (DESCP) during operation, and an Industrial Storm Water Pollution Prevention Plan, unless an exemption to the general NPDES permit is issued upon the project owner's submittal of a Notice of Non-Applicability to the San Diego Regional Water Quality Control Board.

Conservation Easements

There are several areas recorded as conservation easements located within the proposed 230 kV Transmission Line Route B corridor. The conservation easements recorded in favor of the County of San Diego include three easements set aside for wildlife and habitat values, one easement set aside for archeological conservation, and two easements set aside as fire buffers. The applicant has stated in the Applicant's Additional Responses to Staff's Informal Data Requests Regarding Biological Resources that operation and maintenance of the transmission line (Route A or B) would not cause any ground disturbance to the areas held in conservation easement (PPEC 2011s). Furthermore, the line will be designed and located so that operation and maintenance of the line will not disturb any area held in conservation easement as delineated on the County Parcel Map (PM) 20473. The applicant has identified that an 80-foot wide right-of-way would be required for the transmission line route however the applicant did not delineate the right-of-way on any maps submitted. The 80-foot-right-of-way would not be allowed to lie within any area recorded as an easement based on PM 20473. These measures have been incorporated into staff's proposed Conditions of Certification **BIO-12** (Transmission Line Route B Alternative Impact Avoidance and Minimization Measures) and **CUL-9** (see the **Cultural Resources** section of this Preliminary Staff Assessment).

Staff is awaiting clarification regarding the figure submitted on November 28, 2011 by the applicant that depicts pole locations and construction staging/access areas in relation to all areas held in conservation easement (PPEC 2011s). The figure does not identify right-of-way width and it is unclear whether vegetation removal is proposed. The applicant will provide further information after the publication of the PSA. Regardless,

implementation of conditions of certification **BIO-12** and **CUL-9,** which require complete avoidance of parcels with a conservation easements, would ensure significant impacts from operation and maintenance of the transmission line would be avoided.

Air Emissions – Nitrogen Deposition

Nitrogen deposition is the input of nitrogen oxide (NO_x) and ammonia (NH_3) derived pollutants, primarily nitric acid (HNO_3), from the atmosphere to the biosphere. 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 2006a). The increased dominance and growth of invasive annual grasses is especially prevalent in low-biomass vegetation communities that are naturally nitrogen-limited, such as coastal sage scrub, serpentine grassland, desert scrub, and sand dunes (Weiss 2006a).

The San Ysidro Mountains, which are located less than 2,000 feet east of the proposed PPEC, are primarily characterized by coastal sage scrub habitat. The coastal sage scrub habitat within the San Ysidro Mountains support populations of the federally listed Quino checkerspot butterfly, California gnatcatcher, and Otay tarplant and contains designated critical habitat for all these species (see **Biological Resources Figure 1** for the location of designated critical habitat in relation to the proposed project**)**. Soil types in the San Ysidro Mountains include San Miguel-Exchequer, which is identified as low-fertility soil and naturally low in nitrogen. Nutrient-poor soils support an array of plant species specifically adapted to the soil conditions. Nitrogen is the primary limiting nutrient for plant growth on these soils, and the lack of adequate growth conditions has prevented the invasion of non-native grass species.

Nitrogen deposition, primarily from industrial and vehicle emissions, artificially fertilizes the soil and creates better conditions for non-native species to persist and to ultimately displace the native species. This displacement, and subsequent decline in Quino checkerspot butterflies and plant host species, has been documented in the San Diego region (USFWS 2003). Until nitrogen emissions are reduced in areas of Quino checkerspot butterfly habitat, exotic grass productivity will continue to be high and extensive weed control will be necessary in most habitats for this species (USFWS 2003). In addition, non-native plants may provide fuel for more frequent wildfires (Bell et al. 2009). Coastal sage scrub habitat is well adapted to low intensity fires and will return to a natural state in a few years after a fire (Bell et al. 2009). However, coastal sage scrub habitat is not adapted to intense fires and may be converted to non-native grassland if fires occur too frequently (Bell et al. 2009). Non-native plants influence wildfire regimes by increasing the frequency of fires by providing more continuous fuels that ignite more readily than native species (Bell et al. 2009). In addition, non-native plants may reestablish more rapidly than native species thereby suppressing the recovery of native species and expanding the range of the non-native species (Bell et al. 2009). California gnatcatcher has recently been impacted by large-scale wildfires in 2003 and 2007 which burned tens of thousands of acres of California gnatcatcher habitat (USFWS 2009). The burned areas are also at risk of habitat type conversion caused by invasion of non-native grasses and forbs. Otay tarplant is threatened by

noxious weed invasions which out-compete the native plant by crowding out individual plants and also limiting visitations from pollinators (USFWS 2004).

Although critical habitat for San Diego fairy shrimp and Riverside fairy shrimp is located within the modeled nitrogen deposition plume for the proposed PPEC project, the habitat for these species is located on the edge of the plume with the lowest concentration of nitrogen deposition. Although non-native plant invasions have impacted the vernal pools in the region, invasions generally occur in years when precipitation is sparse. In wetter years, the number of non-native plants is reduced as the non-native upland species are intolerant of inundation. Therefore, the impacts to San Diego fairy shrimp and Riverside fairy shrimp or its critical habitat from nitrogen deposition in these areas, if any, is likely to be negligible. It is therefore not likely that nitrogen deposition from the PPEC project will adversely affect San Diego fairy shrimp and Riverside fairy shrimp or the species' critical habitat.

Excessive nitrogen deposition is strongly correlated with the growth of non-native vegetation (Huenneke et al. 1990; Inouye and Tilman 1995; Weiss 1999; Bowman and Steltzer 1998; Brooks 2003) and field studies have found that nitrogen fertilization in sites with elevated nitrogen deposition will enhance grass invasion (Rillig et al 1998; Brooks 2003). Several recent studies have attempted to quantify the critical load or rate at which nitrogen deposition begins to result in adverse effects to nitrogen-sensitive ecosystems. Studies in the United Kingdom suggest that the critical load ranges from 10 to 20 kilograms of nitrogen per hectare per year (kg/ha/yr) for mobile and fixed sand dune ecosystems (Jones et al. 2004; Plassmann et al. 2009). Fenn et. al. (2003) counter that estimated nitrogen deposition thresholds for ecological effects for other geographic regions are frequently not applicable to the western United States. Research conducted in the South San Francisco Bay area on grasslands in nutrient-poor serpentinic soils indicates that intensified annual grass invasions can occur in areas with nitrogen deposition levels of 11 to 20 kg/ha/yr, with relatively limited invasions at levels of 4 to 5 kg/ha/yr (Weiss 2006b). In previous power plant cases licensed by the Energy Commission (e.g., CEC 2007) as well as a California-wide study of nitrogen deposition (Weiss 2006a), 5 kg/ha/yr was used as a benchmark for analyzing nitrogen deposition impacts to plant communities; this benchmark was also used as the significance threshold in the applicant's nitrogen deposition impact analysis (PPEC 2011k, Data Responses #26 and 27). Regardless of the numerical threshold/screening level/benchmark, the coastal sage scrub habitat in the San Ysidro Mountains and the endangered species therein are evidently experiencing habitat degradation primarily caused by noxious weed invasions which may be attributed to nitrogen deposition (Schlachter 2011).

An Energy Commission Public Interest Energy Research study modeled total nitrogen deposition throughout California (Tonneson et. al. 2007); results showed that most of California experiences elevated rates of annual nitrogen deposition, especially near urban areas. In the area encompassing the San Ysidro Mountains, the baseline nitrogen deposition rate is estimated to range from 10.24 to 12.18 kg/ha/yr (Tonneson et. al. 2007). Although this estimate was produced using 2002 data, it is believed to be the most comprehensive and accurate data set available. Advances in emission control technology have likely resulted in a decrease of NO_x emissions since 2002 (SDCAPCD 2009). Therefore, without updated modeling at a similar scale (4 km^2 grid), it is difficult

to determine whether this baseline level of nitrogen deposition has changed substantially since 2002.[2]

According to the applicant's response to data request #27 (PPEC 2011k), modeled nitrogen deposition rates from PPEC in critical habitat within the San Ysidro Mountains would range from 0.1 to 1.5 kg/ha/yr. Considering PPEC's emissions in combination with background levels, the nitrogen deposition rate within coastal sage scrub habitat in the San Ysidro Mountains within critical habitat for Otay tarplant, Quino checkerspot butterfly, and California gnatcatcher would range from approximately 10.34 to 13.68 kg/ha/yr. See **BIOLOGICAL RESOURCES Figure 1** for details regarding the background nitrogen deposition levels in relation to PPEC emissions. Given that threats to these endangered species from noxious weeds are exacerbated by nitrogen fertilization, the proposed project's deposition of additional nitrogen at this already stressed ecosystem would be a significant indirect impact.

It is understood that emissions from the proposed PPEC project would not be the only source of nitrogen deposition in coastal sage scrub habitat within the San Ysidro Mountains. There are existing industrial stationary sources as well as mobile sources (i.e., transportation) in the San Diego area that collectively contribute to elevated local and regional nitrogen deposition. This includes the San Ysidro-Puerta Mexico Port of Entry which is the busiest passenger crossing on the U.S.–Mexico border located less than 10 miles southwest of the proposed PPEC site (SDCAPCD 2011a). Accordingly, staff proposes that the applicant's mitigation be proportional to the proposed project's contribution toward total nitrogen deposition within critical habitat in the San Ysidro Mountain region. The following equation was developed by staff to calculate this proportion. This calculation has been used in previous siting cases to calculate habitat compensation acres including the Metcalf Energy Center, Los Esteros, and Donald Von Raesfeld Power Project (formerly Pico Power Project).

[Project n-dep within critical habitat / baseline n-dep within critical habitat] X acreage of affected habitat = acres of mitigation land

Since the nitrogen deposition plume extends approximately 6 miles east of the project it encompasses several different baseline levels of nitrogen deposition as illustrated in **BIOLOGICAL RESOURCES Figure 1**. The PPEC's nitrogen deposition levels also vary across USFWS critical habitat areas for each species. Each area that was identified as having different nitrogen deposition baselines and PPEC emission values was identified as a "map zone". Refer to figures in **BIOLOGICAL RESOURCES Appendix A** at the end of this PSA section for an illustration of the map zones. The values for each map zone were calculated individually using the equation above and then totaled to determine the final area of impact for each species. Each map zone calculation accounted for the acres of critical habitat, the PPEC's nitrogen deposition within critical habitat, and the baseline nitrogen deposition.

[2] In data response #26 (PPEC 2011k), the applicant estimated the baseline nitrogen deposition rate to be 4.2 kg/ha/yr. These data were collected from a monitoring station in Converse Flats, California, approximately 110 miles north of the proposed project area. This baseline estimate included inorganic wet deposition from nitrate and ammonium. It did not estimate total nitrogen, which also includes dry deposition (a significant proportion of total nitrogen (see Weiss 1999, Tonneson 2007, and Fenn et. al. 2003) and all the nitrogen species (i.e., HNO_3, NH_3, NO, NO_2, N_2O_5, PAN, and aerosol ammonium nitrate [NH_4NO_3]).

Following is an example of this methodology applied for two map zones of affected Quino checkerspot butterfly habitat:

Map Zone 1 [0.1 kg/ha/yr/11.56 kg/ha/yr] X 15.32 acres = 0.1325 acres;
Map Zone 2 [0.1 kg/ha/yr/12.18 kg/ha/yr] X 555.2 acres = 4.556 acres; …

This calculation was repeated for all 15 Quino checkerspot butterfly map zones, and totaled to be 46.93 acres. This method of calculation was repeated for California gnatcatcher and Otay tarplant.

Based on this calculation the applicant would be required to provide funding to support a noxious weed abatement program on or acquire and conserve in perpetuity 46.93 acres of Quino checkerspot butterfly habitat, 18.57 acres of California gnatcatcher habitat, and 11.86 acres of Otay tarplant habitat. Mitigation can be implemented for these species either separately or together if suitable habitat for a combination of species can be found in the same location (see **Biological Resources Table 3** and Condition of Certification **BIO-13** (Weed Abatement Program Funding or Land Acquisition). Refer to **BIOLOGICAL RESOURCES Appendix A** at the end of this PSA section for tables showing the calculated values for each map zone per listed species.

BIOLOGICAL RESOURCES Table 3
Impacts to Quino Checkerspot Butterfly, Coastal California Gnatcatcher, and Otay Tarplant Critical Habitat

Species	Total Acres of Critical Habitat Impacted by PPEC	Calculated Mitigation Acreage
Quino Checkerspot Butterfly	2,706.39	46.93
Otay Tarplant	305.10	11.86
Coastal California Gnatcatcher	1,093.12	18.57

Mitigation Options

In discussions with USFWS, CDFG, and County of San Diego Department of Planning and Land Use two options for mitigating indirect and cumulative impacts to listed species from PPEC nitrogen deposition were identified: 1) funding a new or established weed abatement program or 2) purchasing lands to set aside as a conservation easement. Each of these is described below and outlined in proposed Condition of Certification **BIO-13**.

One mitigation option is to fund a new or established weed abatement program on critical habitat or habitat that contains the primary constituent elements[3] for Quino checkerspot butterfly, Otay tarplant and California gnatcatcher. If the project owner elects to establish a new weed abatement program, the project owner shall conduct a Property Analysis Record (PAR) or PAR-like analysis to establish the appropriate long-term fee to fund the weed abatement program for the identified lands for the life of the project. A PAR or PAR-like analysis uses a computerized database methodology that calculates the costs of land management for a specific project. The PAR helps analyze

[3] Primary constituent elements are those physical and biological features of a landscape that a species needs to survive and reproduce (USFWS 2000).

the characteristics and needs of the property from which management requirements are derived and identifies management tasks and estimates their costs as well as the necessary administrative costs to provide the full cost of managing any property. However, if the project owner proposes to fund an established weed abatement program, the project owner shall identify the cost of funding the weed abatement program lands for the life of the project as determined by the entity implementing the program.

The applicant submitted potential locations at which to fund a noxious weed abatement program: Crestridge Conservation Bank, Deer Canyon Conservation Bank, Red Mountain Bank, and San Diego National Wildlife Refuge (PPEC 2011p); however, the suitability of these options is still being discussed among staff, USFWS, and CDFG. Three of the applicant-identified conservation banks are located between 25 and 55 miles north of the PPEC project; due to the excessive distance from the PPEC project, these sites are not preferred by staff or the agencies as they are well-outside the area of impact (i.e., nitrogen deposition plume). It is currently unknown if the San Diego National Wildlife Refuge would allow implementation of weed abatement mitigation on its land; USFWS is coordinating internally regarding this issue.

The County of San Diego is working to establish a weed abatement program that would be suitable for PPEC mitigation if approved prior the start of to PPEC operation. This program, the Quino Checkerspot Adaptive Management and Monitoring Strategy, is currently in draft and not yet finalized. This strategy is part of the County of San Diego Quino Checkerspot Butterfly MSCP Amendment that is not yet approved but may be approved by the end of 2012. The Quino Checkerspot Adaptive Management and Monitoring Strategy will include actions such as habitat monitoring, population censuses, and habitat enhancement activities as well as creation of new habitat for Quino checkerspot butterfly, which may also benefit Otay tarplant and California gnatcatcher (CSD 2009). Funding the implementation of these activities or other noxious weed abatement would mitigate significant adverse effects of PPEC nitrogen deposition to listed species.

If appropriate lands are not available at which to fund a weed abatement program and the County of San Diego MSCP Quino Checkerspot Butterfly Amendment is not approved in advance of PPEC operation, staff has determined that purchasing lands within the area affected by PPEC nitrogen deposition to set aside as a conservation easement would also address the indirect and cumulative impacts to listed species from PPEC nitrogen deposition. This determination was made in coordination with USFWS, CDFG, and San Diego County DPLU. The applicant would be required to purchase the lands to be set aside as a conservation easement and set up an endowment to fund management, likely including weed abatement, of the lands in perpetuity. Based on the calculation above, the applicant would be required to purchase compensation lands including 46.93 acres of Quino checkerspot butterfly habitat, 18.57 acres of California gnatcatcher habitat, and 11.86 acres of Otay tarplant habitat either separately or together if suitable habitat for a combination of species can be found in the same location. Acquisition of fewer acres may be acceptable if the parcels are of high value (i.e., with occupied habitat or habitat that contains the primary constituent elements for Quino checkerspot butterfly, Otay tarplant and California gnatcatcher as well as close proximity to the impact area).

These mitigation options are fully described in staff's proposed Condition of Certification **BIO-13**. Weed abatement and/or land acquisition would enhance or preserve habitat for the listed species impacted by nitrogen deposition from the PPEC project. However, it has not been demonstrated that either of these mitigation options are feasible. The applicant must provide specific information demonstrating the feasibility of funding a weed abatement program or acquiring compensatory habitat within the PPEC area of impact. In particular, an existing weed abatement program meeting the aforementioned criteria that is in need of funds must be identified or a landowner willing to sell or place land under permanent conservation easement at which to implement a new weed abatement program must be identified. Staff will also conduct independent research and coordinate with resource agency staff regarding the feasibility of these mitigation options prior to publication of the Final Staff Assessment. Provided that these issues are resolved, such weed abatement or land acquisition would mitigate the project's impacts from nitrogen deposition below the level of significance.

In mid-August the applicant was directed by the EPA to prepare and submit a Biological Assessment (BA) in order to assist the EPA in fulfilling the agency's obligations under Section 7 of the federal Endangered Species Act (EPA 2011). The USFWS has jurisdiction over the protection of threatened and endangered species under the federal Endangered Species Act (ESA). Formal consultation with the USFWS under Section 7 of the ESA is required for any federal action that may adversely affect a federally-listed species. In this case, the federal action is the EPA's issuance of a Prevention of Significant Deterioration (PSD) permit, which is required for new major emission sources in areas that are in attainment or unclassifiable with the National Ambient Air Quality Standards. The Otay tarplant, Quino checkerspot butterfly, and California gnatcatcher are all federally-listed species that may be affected by the proposed project, and therefore formal consultation with the USFWS is required. The EPA initiated formal consultation by submitting a Biological Assessment (BA) to USFWS on December 23, 2011. Following a maximum 135-day review of the BA, the USFWS is expected to issue a Biological Opinion (BO) which will specify mitigation measures which must be implemented for the protection of the Otay tarplant, Quino checkerspot butterfly, and California gnatcatcher. USFWS has indicated that habitat preservation (acquisition) and/or management (weed abatement) will likely be part of the terms and conditions in the BO. In January, the USFWS requested that the applicant identify parcels at which to implement such mitigation (USFWS 2012). Condition of Certification **BIO-14** (Federal Biological Opinion) requires the applicant to submit a copy of the USFWS's Biological Opinion to the Compliance Project Manager and the terms and conditions contained in the Biological Opinion are to be included in the Biological Resources Mitigation and Implementation and Monitoring Plan (BRMIMP) and will be implemented by the project owner pursuant to Condition of Certification **BIO-6** (Biological Resources Mitigation and Implementation and Monitoring Plan).

The applicant is proposing to offset the project's NO_x emissions through the purchase of banked emission reduction credits (ERCs), per the San Diego Air Pollution Control District (SDAPCD) rules and regulations (SDAPCD 2011b; refer also to the **Air Quality** section of this Preliminary Staff Assessment for additional information). These ERCs, most of which were created after the recent shutdown of the South Bay Power Plant, would offset the project's contribution to airborne nitrogen levels within San Diego

County. However, for the following reasons, these offsets would not completely avoid the project's impacts from nitrogen deposition at critical habitat within the San Ysidro Mountains:

- Some ERCs are volatile organic compound (VOC) offsets, which may be used to offset emission increases of NO_x (SDAPCD Rule 20.3(d)(5)(v)). Reducing VOCs does not mitigate nitrogen deposition.
- The NO_x offsets will not offset NH_3, which would be emitted along with project NO_x and would be a substantial contributor to total nitrogen deposition.
- The NO_x-specific ERCs would offset some nitrogen deposition occurring within the San Diego County region, particularly in Chula Vista. Because the South Bay Power Plant is more than 10 miles upwind of the affected critical habitat in the San Ysidro Mountains, its shutdown would not completely offset the localized nitrogen deposition that would occur at this resource from the PPEC, which is less than 0.5 mile upwind of the critical habitat.

CUMULATIVE IMPACTS

Under CEQA Guidelines, a cumulative impact consists of an impact which is created as a result of the combination of the project together with other projects causing related impacts (Title 14 Cal Code Regs §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 (Title 14 Cal Code Regs §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 (Title 14 Cal Code Regs §15164(b)(1)).

The cumulative scenario for biological resources includes past, present, and reasonably foreseeable future projects in the southern San Diego area, including industrial development, business parks, detention facilities, an asphalt and ready-mix concrete plant, an aggregate quarry, and the existing Otay Mesa Generating Project.

The area within this geographic extent has experienced extensive development that has threatened native plant and animal communities by habitat loss, fragmentation, and degradation. Because the PPEC site has been previously graded, the proposed project would not result in or contribute to cumulative loss of special-status species habitat or sensitive aquatic habitats. Furthermore, the proposed PPEC site has been included in the MSCP as a Minor Amendment area and habitat compensation credits were purchased to offset impacts resulting from direct loss of habitat. Other projects in the MSCP area are also required to offset any impacts to covered species, which include many of the same special potentially affected by the proposed project. PPEC construction activities could result in mortality of special-status plants and wildlife as well as disruption and displacement of wildlife species from construction noise and elevated levels of human activity. Special-status species proximate to the project currently experience ongoing human disturbance and elevated noise levels accompanying the developed land uses in the area. Staff's proposed conditions of certification, particularly **BIO-8**, **9**, **10**, and **11**, would reduce impacts to biological resources to less than significant. Residual effects are not expected. With

implementation of staff's proposed conditions of certification the project's contribution to cumulative impacts would be less than cumulatively considerable.

Regarding impacts from nitrogen emissions, the cumulative scenario for biological resources includes past, present, and reasonably foreseeable future projects with emissions that contribute to nitrogen deposition in coastal sage scrub habitat in the San Ysidro Mountains and the USFWS critical habitat contained therein. These projects include Pacific Recovery Power Plant (existing), Calpeak Border Peaker Project (existing), Larkspur 1 and 2 Energy Facility (existing), Otay Mesa Generating Station (existing)**,** San Ysidro-Puerta Mexico Port of Entry, as well as several other existing and proposed industrial stationary sources (e.g., manufacturing facilities), mobile sources, and other nitrogen-emitting activities such as aerial application of fertilizer.

The San Ysidro Mountains, which begin less than 2,000 feet east of the proposed PPEC, are primarily characterized by coastal sage scrub habitat. The coastal sage scrub habitat within the San Ysidro Mountains supports populations of the federally listed Quino checkerspot butterfly, California gnatcatcher, and Otay tarplant and the area contains USFWS-designated critical habitat for these species. All three species are vulnerable to environmental change. The largest threat to these species is noxious weed invasion and the resultant cascading effects (e.g., competition, wildfires). As described above, noxious weed invasion is facilitated by nitrogen deposition, which is a result of the cumulative emissions of many sources within the region.

The proposed PPEC project would contribute to nitrogen deposition within coastal sage scrub habitat in the San Ysidro Mountains which contains USFWS designated critical habitat for all three species. In consideration of the cumulative nitrogen deposition baseline from applicable regional sources, the project's contribution is relatively small (approximately 1%) to substantial (approximately 12.9%).It is the culmination of nitrogen emission sources from similar past, present, and reasonably foreseeable future projects that contribute to the current proliferation of noxious weeds in coastal sage scrub habitat in the San Ysidro Mountains. Given the threat to these species from noxious weed invasions and of the existing noxious weed infestations in coastal sage scrub habitat in the San Ysidro Mountains, especially related to nitrogen deposition, PPEC emissions and the resulting incremental effect to federally endangered Quino checkerspot butterfly, federally threatened and state endangered Otay tarplant, and federally threatened coastal California gnatcatcher are cumulatively considerable in the absence of mitigation. To this end, staff recommends Condition of Certification **BIO-13** to reduce the project's contribution to cumulative impacts. Per Condition of Certification **BIO-13**, the applicant would either provide funding to an existing or new weed abatement program or acquire lands to be held in conservation easement in perpetuity to benefit the listed species affected by the PPEC project's nitrogen deposition. As described above, the acreage on which the weed abatement would occur or that would be acquired would be proportional to the proposed project's contribution to nitrogen deposition occurring at USFWS designated critical habitat in the San Ysidro Mountains. However, it is unclear whether the mitigation options of weed abatement program funding and land acquisition are feasible. Specifically, a willing landowner(s) with parcel(s) at which to implement weed abatement or acquire has not been identified. Provided these issues are resolved, such a weed abatement program or land

acquisition would mitigate the project's incremental contribution towards Nitrogen deposition within critical habitat to less than cumulatively considerable.

COMPLIANCE WITH LORS

This section is based on the laws, ordinances, regulations, and standards (LORS) provided in **Biological Resources Table 1** above. Under the Warren-Alquist Act (Public Resources Code § 25500) the Energy Commission's certificate for thermal power plants 50 MW and more is "in lieu of" other state, local, and regional permits (ibid.). Staff will incorporate all required terms and conditions that might otherwise be included in state permits into the Energy Commission's certification process. When conditions of certification are finalized they would satisfy state LORS and take the place of terms and conditions that, but for the Commission's exclusive authority, would have been included in state permits.

Biological Resources Table 4 states whether the proposed project would be in compliance with the applicable LORS, and a discussion of the project's compliance status. Additional analysis of compliance with the federal and California endangered species acts is presented below the table.

BIOLOGICAL RESOURCES Table 4
LORS Compliance

LORS	Compliance Determination	Discussion
FEDERAL		
Clean Water Act of 1977 (Title 33, United States Code, sections 1251–1376, and Code of Federal Regulations, part 30, Section 330.5(a)(26))	Yes	Construction would avoid potentially jurisdictional drainages. **BIO-11** requires complete avoidance of conservation easements, which would include the potentially jurisdictional drainage therein. USACE is expected to issue a letter with a Preliminary Jurisdictional Determination that impacts to federally jurisdictional resources would be avoided.
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.)	Yes	**Direct:** Construction of the proposed project could result in the "take" of California gnatcatcher and Otay tarplant listed under the federal ESA. The applicant has take coverage through the Minor Amendment processed for the project parcels through the County of San Diego Multiple Species Conservation Program South County Subarea Plan (MSCP) which covers impacts to all of the species covered under the MSCP. Conditions of Certification **BIO-7** and **BIO-12** provide measures to avoid and minimize direct impacts to these species. **Indirect and Cumulative:** Operation of the proposed project would result in indirect and cumulative impacts to federally-listed species from PPEC nitrogen deposition. It is staff's opinion that take of listed species would not result, but the ultimate determination of federal ESA compliance will be made by the USFWS with issuance of their Biological Opinion to USEPA.
Eagle Act (Title 50, Code of Federal Regulations, sections 22.26 and 22.27)	Yes	Golden eagles are not expected to nest near the project site or along any project linear features however, eagles may forage in grasslands and coastal sage scrub habitats located adjacent to the project site. Condition of Certification **BIO-7** limits off-site disturbance.
Bald and Golden Eagle Protection Act (Title 16, United States Code section 668)	Yes	Golden eagles are not expected to nest near the project site or along any project linear features however, eagles may forage in grasslands and coastal sage scrub habitats located adjacent to the project site. Condition of Certification **BIO-7** limits off-site disturbance.
Migratory Bird Treaty (Title 16, United States Code, sections 703 through 711)	Yes	Condition of Certification **BIO-8** provides for pre-construction nest surveys, protective buffers, and monitoring if nests are found, and Condition of Certification **BIO-7** limits off-site disturbance.
Migratory Bird Treaty Reform Act (70 F.R. 12710-12716 (March 15, 2005))	Yes	Condition of Certification **BIO-8** provides for pre-construction nest surveys, protective buffers, and monitoring if nests are found, and Condition of Certification **BIO-7** limits off-site disturbance.

LORS	Compliance Determination	Discussion
Fish and Wildlife Coordination Act	Yes	The EPA has directed the applicant to prepare a Biological Assessment as part of Section 7 Consultation with the USFWS. Condition of Certification **BIO-14** requires all terms and conditions contained in the Biological Opinion be incorporated into the project's BRMIMP and implemented by the project owner
STATE		
California Endangered Species Act of 1984 (Fish and Game Code, sections 2050 through 2098)	Yes	**Direct:** Construction of the proposed project could result in the "take" of Otay tarplant listed under CESA. The applicant has take coverage through the Minor Amendment processed for the project parcels through the County of San Diego Multiple Species Conservation Program South County Subarea Plan (MSCP) which covers impacts to all of the species covered under the MSCP. Condition of Certification **BIO-7** provides measures to avoid and minimize direct impacts to these species. **Indirect and Cumulative:** Operation of the proposed project would result in indirect and cumulative impacts to state-listed species from PPEC nitrogen deposition. However, it is staff's determination that take of listed species would not result. CDFG has determined that an Incidental Take Permit will not be required pursuant to section 2081 of CESA.
California Code of Regulations (Title 14, sections 670.2 and 670.5)	Yes	The applicant has take coverage through the Minor Amendment approved by CDFG and USFWS for the project parcels through the County of San Diego Multiple Species Conservation Program South County Subarea Plan (MSCP) which covers impacts to all of the species covered under the MSCP. Permits from CDFG and USFWS issued to the MSCP are extended to the applicant through the approval of the Minor Amendment for the project parcels in 2001. Conditions of certification **BIO-7, BIO-10,** and **BIO-12** provide measures to avoid and minimize direct impacts to these species.
California Code of Regulations (Title 20, sections 1702(q) and (v))	Yes	The proposed project is not sited in an area of critical concern for biological resources.
Natural Communities Conservation Planning Act (NCCPA) of 2002 (Fish and Game Code, sections 2800 through 2835)	Yes	The applicant has take coverage through the Minor Amendment approved by the CDFG and USFWS for the project parcels through the County of San Diego Multiple Species Conservation Program South County Subarea Plan (MSCP) which covers impacts to all of the species covered under the MSCP. Permits from CDFG and USFWS issued to the MSCP are extended to the applicant through the approval of the Minor Amendment for the project parcels issued to the landowner in 2001.

LORS	Compliance Determination	Discussion
Fully Protected Species (Fish and Game Code, sections 3511, 4700, 5050, and 5515)	Yes	Golden eagles and other bird species may be found in the project area are California Fully Protected species. Golden eagle are not expected to nest onsite or along any project linear features however, eagles may forage in grasslands and coastal sage scrub habitats located adjacent to the project site. Condition of Certification **BIO-8** provides for pre-construction nest surveys, protective buffers, and monitoring if nests are found, and Condition of Certification **BIO-7** limits off-site disturbance.
Native Plant Protection Act (Fish and Game Code, section 1900 et seq.)	Yes	Condition of Certification **BIO-7** provides for pre-construction special-status plant surveys along Transmission Route B as well as protective buffers and Condition of Certification **BIO-7** limits off-site disturbance.
Nest or Eggs (Fish and Game Code, section 3503)	Yes	Condition of Certification **BIO-8** provides for pre-construction nest surveys, protective buffers, and monitoring if nests are found, Condition of Certification **BIO-7** limits off-site disturbance, and **BIO-5** includes a Worker Environmental Awareness Program (WEAP) to educate workers about compliance with environmental regulations, including Fish and Game Code section 3503.
Birds of Prey (Fish and Game Code, section 3503.5)	Yes	Condition of Certification **BIO-8** provides for pre-construction nest surveys, protective buffers, and monitoring if nests are found, Condition of Certification **BIO-7** limits off-site disturbance, and **BIO-5** includes a WEAP to educate workers about compliance with environmental regulations, including Fish and Game Code section 3503.
Migratory Birds (Fish and Game Code, section 3513)	Yes	Condition of Certification **BIO-8** provides for pre-construction nest surveys, protective buffers, and monitoring if nests are found, Condition of Certification **BIO-7** limits off-site disturbance, and **BIO-5** includes a WEAP to educate workers about compliance with environmental regulations, including Fish and Game Code section 3513.
Nongame mammals (Fish and Game Code section 4150)	Yes	Condition of Certification **BIO-7** limits off-site disturbance.
Significant Natural Areas (Fish and Game Code section 1930 et seq.)	Yes	The proposed project would not be sited in a significant natural area.
Public Resources Code, sections 25500 and 25527	Yes	The proposed project would not be sited in an area of critical concern for biological resources.
Streambed Alteration Agreement (Fish and Game Code sections 1600 and following)	Yes	Since there will be no impacts to the bed, bank, or channel of the drainage held in conservation easement, a 1600 permit would not be required. Condition of Certification **BIO-7** limits off-site disturbance.
Oak Woodlands Conservation Act (Fish and Game Code Section (1360-1372)	Yes	No oak trees or oak woodlands would be impacted as a result of the project.
LOCAL		

LORS	Compliance Determination	Discussion
San Diego County Ordinance Section 86.501-86.509; 8845, 9246, 9632, and 10039	Yes	The applicant has take coverage through the Minor Amendment approved by CDFG and USFWS for the project parcels through the County of San Diego Multiple Species Conservation Program South County Subarea Plan (MSCP) which covers impacts to all of the species covered under the MSCP. Permits from CDFG and USFWS issued to the MSCP are extended to the applicant through the approval of the Minor Amendment for the project parcels in 2001. Conditions of certification **BIO-7, BIO-8, BIO-10, and BIO-12** provide measures to avoid and minimize direct impacts to these species.
San Diego Multiple Species Conservation Program (MSCP)	Yes	The applicant has take coverage through the Minor Amendment approved by CDFG and USFWS for the project parcels through the County of San Diego Multiple Species Conservation Program South County Subarea Plan (MSCP) which covers impacts to all of the species covered under the MSCP. Because CDFG and USFWS concurrence of the Minor Amendment was for the entire 79.09-acre parcel and not tied to a specific subdivision map and the conditions of the Minor Amendment have been met, the proposed PPEC project would not conflict with any habitat or natural community conservation plan. Permits from CDFG and USFWS issued to the MSCP are extended to the applicant through the approval of the Minor Amendment for the project parcels in 2001. Conditions of certification **BIO-7, BIO-8, BIO-10, and BIO-12** provide measures which are consistent with the requirements of the MSCP to avoid and minimize direct impacts to these species.
Otay Subregional Plan – Conservation Element	Yes	Impacts within Otay Subregional Plan area would be within previously disturbed lands and would not be located in a Resource Conservation Area.

Federal Endangered Species Act (ESA; 16 USC Section 1531 et seq.)

Potential take of federally-listed species requires compliance with the federal ESA. "Take" of a federally-listed species is prohibited without a permit. The definition of "take" under ESA section 3(19) includes "harm". Harm is further defined to include "significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering" (50 CFR section 17.3). It is staff's opinion that the proposed project's contribution to cumulative nitrogen deposition and the resultant degradation of critical habitat in the San Ysidro Mountains would not result in harm, as described above, and the project is in compliance with the federal ESA. However, the ultimate determination of federal ESA compliance is made by the USFWS.

The EPA has requested formal consultation under section 7 of the federal ESA for impacts to federally threatened Otay tarplant, federally endangered Quino checkerspot butterfly, and federally threatened California gnatcatcher. The EPA initiated formal consultation by submitting a Biological Assessment (BA) to USFWS on December 23,

2011. Following a maximum 135-day review of the BA, the USFWS is expected to issue a Biological Opinion (BO) which will specify mitigation measures which must be implemented for the protection of the Otay tarplant, Quino checkerspot butterfly, and California gnatcatcher; however, the BO is not expected to include or require incidental take authorization for these species. USFWS has indicated that the applicant will likely be directed to make a contribution to a weed abatement program as part of the terms and conditions in the BO. Staff's proposed conditions of certification, particularly **BIO-13**, were developed in coordination with and reviewed by USFWS in an effort to ensure that they are consistent with the terms and conditions in the BO. In the event there are slight differences, staff also proposed a condition of certification (**BIO-14**) that requires the applicant to submit a copy of the Biological Opinion. The terms and conditions contained therein are to be included in the Biological Resources Mitigation and Implementation and Monitoring Plan (BRMIMP) and would be implemented by the project owner.

California Endangered Species Act (Fish and Game Code Section 2050 et seq.)

CESA prohibits the "take" (defined as "to hunt, pursue, catch, capture, or kill") of state-listed species (i.e., state-endangered Otay tarplant). It is staff's determination that the proposed project's incremental contribution to cumulative nitrogen deposition and the resultant degradation of critical habitat in the San Ysidro Mountains would not result in take, as defined above. CDFG has determined that the proposed PPEC would not require an Incidental Take Permit (ITP) (Rodriguez 2011). Further, staff's proposed conditions of certification, particularly **BIO-13**, were developed in coordination with and reviewed by CDFG. Therefore, it is staff's conclusion that the proposed project would comply with CESA.

NOTEWORTHY PUBLIC BENEFITS

The project does not have any noteworthy public benefits related to biological resources.

CONCLUSIONS

Direct impacts to biological resources onsite would be largely avoided because the proposed PPEC site and laydown areas have previously been graded and are currently devoid of vegetation. In addition, the proposed linear facilities routes (i.e., transmission and natural gas lines) are primarily disturbed or developed. No special-status wildlife species were observed during surveys of the project area; the only special-status plant species observed was San Diego marsh-elder (California rare plant rank 2.2), which was observed within the drainage near Transmission Line Route B. The potential for the project area to support sensitive biological resources is low; the immediate vicinity supports wildlife that are likely habituated to frequent disturbance. Surveys for special-status plants during the appropriate blooming period have not been conducted and survey results for 2012 are requested by staff. With the exception of Otay tarplant, which has moderate potential to occur, there is low potential for special-status plants to occur along Transmission Line Route B and no potential for occurrence within the project site or laydown areas or Transmission Line Route A. The area surrounding the proposed PPEC supports suitable foraging habitat for northern harrier, golden eagle,

and burrowing owl. Suitable burrowing owl nesting habitat is present along Transmission Line Route B and Gas Line Route B, although none were observed during focused surveys. Marginally suitable nesting habitat for California gnatcatcher is present in the willow scrub vegetation in the drainage under biological conservation easement within Transmission Line Route B, although none were observed during surveys.

Potential direct impacts to special-status species in the surrounding area would be avoided and minimized by conducting comprehensive pre-construction surveys, avoiding the biological conservation easement (including the drainage), erecting exclusion fencing and/or silt fencing around any sensitive resources or species identified before site mobilization, implementing Best Management Practices, and other impact minimization and avoidance measures set forth in the conditions of certification. With implementation of proposed avoidance and minimization measures and conditions of certification, direct impacts to biological resources would be less than significant.

Indirect and cumulative impacts to critical habitat for Quino checkerspot butterfly, Otay tarplant, and coastal California gnatcatcher would result from nitrogen deposition caused by PPEC emissions. One of the greatest threats to these listed species is noxious weed invasion and the resultant cascading effects (e.g., competition, wildfire), which are exacerbated by nitrogen deposition. Emissions from the proposed project would deposit an average of between approximately 0.1 and 1.5 kilogram per hectare per year (kg/ha/yr) of nitrogen within coastal sage scrub critical habitat for these listed species in the San Ysidro Mountains. Additional nitrogen deposition at this already stressed ecosystem would be a significant impact absent mitigation.

It is staff's determination that funding a noxious weed abatement program or acquiring land to place in a conservation easement (as described in **BIO-13** (Weed Abatement Program Funding or Land Acquisition) would mitigate adverse impacts to Quino checkerspot butterfly, Otay tarplant, and coastal California gnatcatcher from noxious weed proliferation exacerbated by PPEC's nitrogen deposition. However, the feasibility of these mitigation options is currently uncertain. Prior to publication of the Final Staff Assessment, staff requires that an existing weed abatement program meeting the aforementioned criteria that is in need of funds must be identified or a landowner willing to sell or place land under permanent conservation easement at which to implement a new weed abatement program must be identified. Staff will also conduct independent research and work with CDFG and USFWS to assess feasibility. Provided that these issues are resolved, such weed abatement or land acquisition would mitigate the project's impacts from nitrogen deposition within critical habitat below the level of significance.

With implementation of applicant-proposed impact avoidance and minimization measures and staff's proposed conditions of certification, the project would be in compliance with federal, state, and local LORS relating to biological resources including the federal and California endangered species acts and the federal Clean Water Act.

PROPOSED CONDITIONS OF CERTIFICATION

Staff proposes the following Biological Resources conditions of certification:

Designated Biologist Selection

BIO-1 The project owner shall submit the resume, at least three references and contact information of the proposed Designated Biologist (DB) to the Compliance Project Manager (CPM) for approval.

The Designated Biologist must at least meet the following minimum qualifications:

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

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 DB 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 45 days prior to the start of pre-construction site mobilization. No pre-construction site mobilization activities shall commence until an approved Designated Biologist is available to be on site.

If a Designated Biologist needs to be 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, and closure activities. The Designated Biologist may be assisted by the approved Biological Monitor(s), but remains the contact for the project owner and CPM.

1. Advise the project owner's Construction and Operation Managers on the implementation of the biological resources Conditions of Certification;

2. 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;

3. Clearly mark sensitive biological resource areas and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions;

4. Notify the project owner and the CPM of any non-compliance with any biological resources Condition of Certification;

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

6. Maintain written records of the tasks specified above. Summaries of these records shall be submitted in the Monthly Compliance Report during project construction.

Verification: The Designated Biologist shall submit in the Monthly Compliance Report to the CPM copies of all written reports and summaries that document biological resources activities. If actions may affect biological resources during operation a Designated Biologist shall be available for monitoring and reporting.

Biological Monitor Selection

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

Verification: The project owner shall submit the specified information to the CPM for approval at least 30 days prior to the start of any pre-construction site mobilization. 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 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 or 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 or Biological Monitor(s) shall:

1. Require a halt to all activities in any area when determined that there would be an unauthorized adverse impact to biological resources if the activities continued;

2. Inform the project owner and the Construction/Operation Manager when to resume activities; and

3. Notify the CPM if there is a halt of any activities, and advise the CPM of any corrective actions that have been taken, or would be instituted, as a result of the work stoppage.

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

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

Worker Environmental Awareness Program

BIO-5 The project owner shall develop and implement a CPM-approved Worker Environmental Awareness Program (WEAP) in which each of its employees, as well as employees of contractors and subcontractors who work on the project site or any related facilities during site mobilization, ground disturbance, grading, construction, operation, and closure are informed about sensitive biological resources associated with the project.

The WEAP must:

1. Be developed by or in consultation with the Designated Biologist and consist of an on-site or training center presentation in which supporting written material and electronic media is made available to all participants;

2. Discuss the locations and types of sensitive biological resources on the project site and adjacent areas, if present;

3. Present the reasons for protecting these resources;

4. Present the meaning of various temporary and permanent habitat protection measures as necessary;

5. Discuss penalties for violation of applicable LORS (e.g., federal and state endangered species acts);

6. Identify whom to contact if there are further comments and questions about the material discussed in the program; and

7. Include a training acknowledgment form to be signed by each worker indicating that they received training and shall abide by the guidelines.

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

Verification: At least 60 days prior to the start of pre-construction site mobilization, the project owner shall provide to the CPM the proposed 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. At least 10 days prior to pre-construction site mobilization, the project owner shall submit two copies of the CPM-approved materials. The project owner shall provide in the Monthly Compliance Report the number of persons who have completed the training in the prior month and a running total of all persons who have completed the training to date.

WEAP text, and photos to be used as part of a presentation, shall be approved by the CPM prior to the production of an electronic WEAP presentation, if the latter is to be used.

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

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

Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP)

BIO-6 The project owner shall develop a BRMIMP and submit two copies of the proposed BRMIMP to the CPM (for review and approval) and to CDFG, USFWS (for review and comment) if applicable and shall implement the measures identified in the approved BRMIMP.

The BRMIMP shall be prepared in consultation with the Designated Biologist and shall identify:

1. all biological resource mitigation, monitoring, and compliance measures proposed and agreed to by the project owner;

2. all applicant-proposed mitigation measures presented in the Application For Certification, data request responses, and workshop responses;

3. all biological resource conditions of certification identified as necessary to avoid or mitigate impacts;

4. all biological resources mitigation, monitoring, and compliance measures required in the County of San Diego Multiple Species Conservation Plan Biological Mitigation Ordinances and the USFWS Biological Opinion;

5. all biological resource mitigation, monitoring, and compliance measures required in other state agency terms and conditions, such as those provided in the National Pollution Discharge Elimination System (NPDES) Construction Activities Stormwater General Permit;

6. all biological resource mitigation, monitoring, and compliance measures required in local agency permits, such as site grading and landscaping requirements;

7. a list of all sensitive biological resources to be impacted, avoided, or mitigated during project construction, operation, and closure;

8. all required mitigation measures for each sensitive biological resource;

9. a detailed description of measures that shall be taken to avoid or mitigate temporary disturbances from construction activities;

10. all locations on a map, at an approved scale, of sensitive biological resource areas subject to disturbance and areas requiring temporary protection and avoidance during construction;

11. aerial photographs, at an approved scale, of all areas to be disturbed during project construction activities — one set prior to any site (and related facilities) mobilization disturbance and one set subsequent to completion of project construction. Include planned timing of aerial photography and a description of why times were chosen;

12. duration for each type of monitoring and a description of monitoring methodologies and frequency;

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

14. all performance standards and remedial measures to be implemented if performance standards are not met;

15. a preliminary discussion of biological resources-related facility closure measures; and

16. a process for proposing BRMIMP modifications to the CPM and appropriate agencies for review and approval.

Verification: The project owner shall provide the draft BRMIMP to the CPM at least 60 days prior to start of any site (or related facilities) mobilization. If there are any permits that have not yet been received when the BRMIMP is first submitted, these permits shall be submitted to the CPM within 5 days of their receipt, and the BRMIMP shall be revised or supplemented to reflect the permit condition within 10 days of their receipt by the project owner. At least 10 days prior to site and related facilities mobilization the revised BRMIMP shall be resubmitted to the CPM.

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

Implementation of BRMIMP measures will be reported in the Monthly Compliance Reports by the Designated Biologist (i.e., survey results, construction activities that were monitored, species observed). Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval a written construction completion report identifying which items of the BRMIMP have been completed, a summary of all modifications to mitigation measures made during the project's site mobilization, ground disturbance, grading, and construction phases, and which mitigation and monitoring items are still outstanding. Additional copies shall be provided to County of San Diego Department of Planning and Land Use, CDFG, and USFWS.

General Impact Avoidance and Minimization Measures

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

1. Limit Disturbance Area. Clearly demarcate construction exclusion zones around biologically sensitive areas, including but not limited to all areas held in conservation easement located along the transmission line routes, and any other sensitive biological resources identified during pre-construction surveys. Any potential Quino checkerspot butterfly habitat along linear routes will also be avoided. Vehicles and personnel shall be prohibited from entering sensitive habitats. Protection would include wildlife exclusion fencing and/or silt fencing, signs, and sediment control measures installed prior to pre-construction site mobilization. Standard Best Management Practices from the project Stormwater Pollution Prevention Plan the will be implemented during all phases of the project.

2. Minimize Impacts of Transmission Lines. Transmission lines and all electrical components shall be designed, installed, and maintained in accordance with the *Avian Power Line Interaction Committee (APLIC), Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006* (APLIC 2006) to reduce the likelihood of electrocutions of large birds.

3. Avoid Use of Toxic Substances. Road surfacing and sealants as well as soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants.

4. Minimize Lighting Impacts. Facility lighting shall be designed, installed, and maintained to prevent side casting of light towards the project boundaries. Lighting shall be shielded, directional, and at the lowest intensity required for safety. Lighting shall be directed away from biologically sensitive areas (e.g., drainage area held in conservation easement by the County of San Diego).

5. Avoid Wildlife Pitfalls. At the end of each work day, the Designated Biologist or Biological Monitor shall ensure that all potential wildlife pitfalls (trenches, bores, and other excavations) have been backfilled. If backfilling is not feasible, all trenches, bores, and other excavations shall be sloped at a 3:1 ratio at the ends to provide wildlife escape ramps, or covered completely to prevent wildlife access. Should wildlife become trapped, the Designated Biologist or Biological Monitor shall remove and relocate the individual to a safe location. Any wildlife encountered during the course of construction shall be allowed to leave the construction area unharmed.

6. Avoid Entrapment of Wildlife. Any construction equipment, pipe, culvert, or similar structure with a diameter of 4 inches or greater, stored less than 8 inches above ground for one or more days/nights, shall be inspected for wildlife before the material is moved, buried, or capped. As an alternative, all such structures may be capped before being stored, or placed on pipe racks.

7. Report Wildlife Injury and Mortality. Report all inadvertent deaths of special-status species to the appropriate project representative, including road kill. Species name, physical characteristics of the animal (sex, age class, length, weight), and other pertinent information shall be noted and reported in the Monthly Compliance Reports. Injured animals shall be reported to CDFG and/or USFWS and the CPM and the project owner shall follow instructions that are provided by CDFG or USFWS. The USFWS office shall be notified in writing within three working days of the accidental death or injury to special-status species during project-related activities.

8. Avoid Spread of Noxious Weeds. The project owner shall implement the following measures during construction and operation to prevent the spread and propagation of noxious 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.

9. Worker Guidelines. During construction all trash and food-related waste shall be placed in self-closing containers and removed weekly from the site. Workers shall not feed wildlife or bring pets to the project site. Except for law enforcement personnel, no workers or visitors to the site shall bring firearms or weapons.

10. Limit Vehicle Impacts. Vehicles shall be confined to established roadways and preapproved overland access routes. Limit access routes and the number and size of staging areas and work areas to the minimum necessary to achieve the project goals. Routes and boundaries of work areas, including access roads, shall be clearly marked prior to initiating project construction.

11. Minimize Impacts to Trees. During construction measures will be implemented to minimize impacts to existing trees adjacent to the PPEC project site and linear facilities. This includes installation of silt fencing and/or wildlife exclusion fencing to reduce the likelihood of impacts to trees.

12. Implement Pesticide Use Best Management Practices. During construction and operation the project owner shall conduct pesticide management in accordance with standard Best Management Practices (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 downstream. If rodent control must be conducted, zinc phosphide or an equivalent product shall be used.

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP and implemented. Implementation of the measures will be reported in the Monthly Compliance Reports by the Designated Biologist. Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction termination report identifying how measures have been completed. Additional copies shall be provided to the CDFG and USFWS.

Pre-Construction Nest Surveys and Impact Avoidance and Minimization Measures for Breeding Birds

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

1. Surveys shall cover all potential nesting habitat in the project site and within 250 feet of the boundaries of the plant site as well as the natural gas line route and transmission line route. Surveys specifically for nesting northern harriers shall be conducted within 1,000 feet of designated disturbance areas that contain appropriate 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 30 days prior to initiation of construction activity. One survey needs to be conducted within the 14-day period preceding initiation of construction activity. Additional follow-up surveys may be required if periods of construction inactivity exceed three weeks in any given area, an interval during which birds may establish a nesting territory and initiate egg laying and incubation.

3. If active nests are detected during the survey, a no-disturbance buffer zone (protected area surrounding the nest), the size of which is to be determined by the Designated Biologist in consultation with the CPM (in coordination with CDFG and USFWS) and monitoring plan shall be developed. Nest locations shall be mapped using GPS technology and submitted, along with a weekly report stating the survey results, to the CPM, in the Monthly Compliance Reports.

4. The Designated Biologist shall monitor the nest until he or she determines that nestlings have fledged and dispersed. Activities that might, in the opinion of the Designated Biologist, disturb nesting activities (e.g., excessive noise above 60 dBA), shall be prohibited within the buffer zone until such a determination is made.

Verification: Prior to the start of any pre-construction site mobilization, the project owner shall provide the CPM a letter-report describing the findings of the pre-construction nest surveys, including the time, date, and duration of the survey; identity and qualifications of the surveyor(s); and a list of species observed.

If active nests are detected during the survey, the report shall include a map or aerial photo identifying the location of the nest and shall depict the boundaries of the no-disturbance buffer zone around the nest, and a monitoring plan shall be submitted to the CPM for review and approval. Additional copies shall be provided to the CDFG and USFWS. Approval of the plan is required before construction may commence. All impact avoidance and minimization measures related to nesting birds shall be included in the BRMIMP and implemented. Implementation of the measures shall be reported in the Monthly Compliance Reports by the Designated Biologist.

Pre-Construction Special-Status Plant Surveys and Impact Avoidance and Minimization Measures

BIO-9 The project site shall be surveyed for special-status plant species by a qualified botanist, approved by the CPM, prior to pre-construction site mobilization. The Transmission Line Route B and any other areas containing potential habitat shall be surveyed for special-status plants during the blooming period, when species are both evident and identifiable, for all special-status plants identified in Biological Resources Table 2 as having a low to moderate potential to occur in the project area. Surveys shall be consistent with CDFG Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (CDFG 2009).

1. If special-status plant species are detected they shall be avoided and the CPM and if necessary, the CDFG and/or USFWS shall be contacted for further guidance.

2. If special-status plant species are detected that cannot be avoided and are not covered for take under the MSCP, the project owner will utilize Transmission Route A.

3. If special-status plant species are detected that cannot be avoided which are covered for take under the MSCP, the project owner will avoid to the maximum extent practicable, and the terms and conditions of the MSCP shall be followed as applicable to the species.

4. Any special-status plant species detected will be documented and the data will be submitted to the California Natural Diversity Database (CNDDB) within 30 days of completion of surveys. CNDDB data will be submitted following the current instructions on the CDFG website.

Verification: No less than 30 days prior to the start of any pre-construction site mobilization, the project owner shall provide the CPM a letter-report describing the findings of the pre-construction special-status plant surveys following the Botanical Survey Report Guidelines in the CDFG Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (CDFG 2009), including the dates, identity and qualifications of the surveyor(s); discussion of timing of surveys, and a list of all species observed. Raw GPS data, metadata, and CNDDB field forms shall be submitted to the CPM within 2 weeks of the completion of the survey. The results for the botanical surveys shall also be submitted to the CPM within 2 weeks following the completion of the surveys. If surveys are split into more than one period, then a summary letter shall be submitted following each survey period. The final letter-report shall include a detailed accounting of the acreage of Project impacts to special-status plant occurrences.

If special-status plants are detected during the survey, the report shall include a map or aerial photo identifying the location and shall depict the boundaries of the no-disturbance buffer zone around the plant population, An avoidance and minimization plan shall be submitted to the CPM for review and approval. Additional copies shall be provided to the CDFG and USFWS. Approval of the plan is required before construction may commence. All impact avoidance and minimization measures related to special-status plants shall be included in the BRMIMP and implemented. Implementation of the measures shall be reported in the Monthly Compliance Reports by the Designated Biologist. Copies of all CNDDB forms shall also be included in the Monthly Compliance Report.

Western Burrowing Owl Impact Avoidance and Minimization Measures

BIO-10 The project owner shall implement the following measures to manage their construction site, and related facilities, in a manner to avoid or minimize impacts to breeding and foraging burrowing owls.

1. A qualified biologist, approved by the CPM, shall conduct a pre-grading survey no more than 30 days before initial brushing, clearing, grubbing, or grading of the project site, regardless of the time of the year.

2. Surveys shall take place in accordance with all requirements for Pre-Grading Surveys listed in Section 3.4 of the Strategy to Mitigate Impacts to Burrowing Owls in the Unincorporated County included in the County of San Diego Report Format and Content Requirements – Biological Resources (CDS 2010) or most current Biological Mitigation Ordinances issued by the County of San Diego Department of Planning and Land Use (DPLU) and the Department of Fish and Game's Staff Report on Burrowing Owl Mitigation (1995). This includes following all pre-grading survey guidelines, measures if burrowing owl are not found during pre-grading surveys, measures if burrowing owl are found during pre-grading surveys, pre-grading survey report, pre-construction meeting, and Best Management Practices listed in Section 3.4.3 of the Strategy to Mitigate Impacts to Burrowing Owls in the Unincorporated County during construction. The results of the surveys shall be sent to the CPM for review and approval, in consultation with CDFG.

3. If burrowing owls are detected during the breeding season then construction shall occur outside of the breeding season (February 1 through August 31).

4. If burrowing owl are detected and it is not during the breeding season, the burrowing owl may be evicted following the requirements outlined in Section 4.5.4 of the Strategy to Mitigate Impacts to Burrowing Owls in the Unincorporated County. Both passive translocation and eviction require approval from the CPM in consultation with the County of San Diego DPLU, CDFG, and USFWS.

5. If burrowing owls are to be evicted from the project site, artificial burrows shall be built following the requirements of Section 4.5.4 of the Strategy to Mitigate Impacts to Burrowing Owls in the Unincorporated County. Long-term monitoring requirements will be included in a resource management plan prepared in accordance with the requirements of Section 4.6 of the Strategy to Mitigate Impacts to Burrowing Owls in the Unincorporated County and monitoring of the mitigation site will follow the requirements of Section 4.7 of the Strategy to Mitigate Impacts to Burrowing Owls in the Unincorporated County.

Verification: All avoidance and minimization measures related to burrowing owl shall be included in the BRMIMP and implemented. Implementation of the measures shall be reported in the Monthly Compliance Reports by the Designated Biologist. The project owner shall immediately report the results of the pre-grading survey to the CPM and the County of San Diego Mitigation Monitoring Coordinator, CDFG and USFWS prior to grading and must be provided in writing. The written and signed pre-grading survey report shall be submitted within 14 days of the survey. If passive relocation or burrow closures are required a report summarizing owl exclusions and burrow closures shall be submitted to the CPM, the County of San Diego Department of Planning and

Land Use (DPLU), CDFG, and USFWS within 7 days of completing exclusions and burrow closures. If a resource management plan is required, the project owner shall submit a final management plan to the CPM that has been reviewed and approved by the CPM, in consultation with the County of San Diego DPLU, USFWS, CDFG and the land-owning City department (City of San Diego), if applicable, at least 60 days prior to the start of project construction.

Transmission Line Route B Alternative Impact Avoidance Measures

BIO-11 In the event that Transmission Line Alternative Route B is selected for the PPEC project, the project owner shall design, construct, operate, and maintain the transmission line in a manner that avoids any and all disturbances to the Open Space Easement area (*Easement in Favor of the County of San Diego for Open Space, recorded September 13, 2001 as File No. 2001-0657832, O.R., Easement in Favor of the County of San Diego for Conservation of Parcel "A", recorded May 31, 2006 as File No. 2006-0384034, O.R., and Easement in Favor of the County of San Diego for Conservation of Parcel "B", recorded May 31, 2006 as File No. 2006-0384034, O.R*), which protects biological resources areas, as depicted on Parcel Map 20473, Easement Area "A", "B", and "F". The Designated Biologist or Biological Monitor shall monitor all construction activities during the construction of Transmission Line Alternative Route B.

Verification: At least 30 days prior to the initiation of any construction-related ground disturbance, the project owner shall submit to the CPM for review and approval, a map figure, based on Parcel Map 20473, that depicts the final design plans for the construction of Transmission Line Alternative Route B (including the precise power pole locations, transmission line rights-of-way, construction staging areas, and all points of access for construction and maintenance activities, relative to the Open Space Easement areas.

At least 30 days prior to the initiation of any construction-related ground disturbance, the project owner shall prepare and submit a written plan to the CPM for review and approval that describes in detail how the construction, operation, and maintenance of Transmission Line Alternative Route B will not encroach upon or disturb the Open Space Easement areas.

At least two weeks prior to the initiation of any construction-related ground disturbance for Transmission Line Alternative Route B, the project owner shall notify both the CPM and the Designated Biologist in writing (via letter or email), describing the schedule for the construction of Transmission Line Alternative Route.

California Gnatcatcher Impact Avoidance and Minimization Measures

BIO-12 The following measures shall be implemented to avoid and minimize impacts to California gnatcatcher.

1. Pre-construction surveys shall be conducted concurrent with the nesting bird pre-construction surveys. Surveys shall be conducted as described in condition of certification **BIO-8.**

2. ESA fencing will be installed to protect the conservation easement along the unnamed drainage within the transmission line corridor (Route B) as described under general impact avoidance and minimization measures (see **BIO-7**).

3. All brushing, clearing, and/or grading shall be restricted such that none will be allowed within 300 feet of habitat protected within an open space easement (easement along Transmission Route B) during the breeding season of the California gnatcatcher (between March 1 and August 15). The project owner can apply to the County of San Diego Department of Planning and Land Use for a waiver of the no-disturbance buffer zone requirements if no California gnatcatcher is present in the vicinity of brushing, clearing, or grading. The waiver must also be approved by the CDFG and USFWS and the CPM must be notified of any request for a waiver.

Verification: The project owner shall submit a letter-report to the CPM, the County of San Diego Department of Planning and Land Use (DPLU), CDFG, and USFWS at least 30 days prior to pre-construction site mobilization that describes when surveys were completed, observations, and measures to be implemented. All avoidance and minimization measures related to California gnatcatcher shall be included in the BRMIMP and implemented. Implementation of the measures shall be reported in the Monthly Compliance Reports by the Designated Biologist.

Land Acquisition and/or Weed Abatement Program Funding or Land Acquisition

BIO-13 *Note: These measures are preliminary and subject to modification during ongoing coordination with USFWS, CDFG, USEPA, the County of San Diego Department of Planning and Land Use, and the applicant.*

To mitigate for nitrogen deposition impacts to critical habitat and associated listed species (Otay tarplant, Quino checkerspot butterfly, and California gnatcatcher), prior to start of project operation the project owner shall fund one or more of the following options:

Weed Abatement Program

A. Provide funding to support an existing or establish a new noxious weed abatement program on critical habitat or habitat that contains the Primary Constituent Elements in the amount listed for the following species: 46.93 acres of Quino checkerspot butterfly habitat, 18.57 acres of California gnatcatcher habitat, and 11.86 acres of Otay tarplant habitat. Weed abatement can be implemented for habitat either separately or together if suitable habitat for a combination of species can be found at the same location. If habitat is identified that benefits all three species, it shall be no less than 46.93 acres unless approved in writing by the CPM (in consultation with CDFG and County of San Diego DPLU) and USFWS.

If the project owner proposes to establish a weed abatement program, the project owner shall conduct a Property Analysis Record (PAR) or PAR-like analysis to establish the appropriate long-term fee to fund the weed abatement program for the identified lands for the life of the project. The project shall also demonstrate that the lands on which the new weed abatement program will be conducted are under conservation easement or otherwise protected in perpetuity. If the project owner proposes to fund an established weed abatement program, the project owner shall identify the cost of funding the weed abatement program lands for the life of the project as determined by the entity implementing the program.

The project owner will submit to the CPM the name of the entity that will be implementing the program for the life of the PPEC project and the endowment funds in the amount determined to be adequate to provide funding for weed abatement on the required acres for the life of the PPEC project. The entity to implement the program and the amount of the endowment shall be approved by the CPM in consultation with the USFWS, CDFG, and the County of San Diego Department of Planning and Land Use (DPLU).

If the project owner chooses to establish a new weed abatement program, the project owner shall submit a weed abatement plan to the CPM for review and approval and to the USFWS, CDFG, and the County of San Diego DPLU for review and comment. The weed abatement plan shall include the following for the mitigation lands: (1) existing conditions at the site(s) and goals for habitats and specific plant populations to be managed and monitored; (2) site preparation methods (weed control treatments, soil preparation methods, native species protection methods, timing); (3) weed abatement and site restoration specifications; (4) short (12 months or less) and long-term maintenance and monitoring schedule and methods. If the weed abatement program will be implemented within the nitrogen deposition impact area, then the weed abatement program shall include a biological monitoring component to assess populations of Otay tarplant within the affected area for any long-term effects of competition from noxious weeds. If funding is provided to an existing weed abatement program the project owner shall submit the management plan or other statement of work from the existing program.

Weed abatement programs could include the San Diego's Quino Checkerspot Adaptive Management and Monitoring Strategy, to be implemented as part of the County of San Diego's Quino Checkerspot Butterfly Amendment currently in preparation if approved prior to start of project operation. Management activities funded may include but are not limited to: noxious weed eradication using appropriate methods at the optimal time-of-year to limit seed dispersion and avoid impacts to species, native seed application from local sources (preferably on-site) including Otay tarplant seeds, planting of shrubs in appropriate habitat for California gnatcatcher, and propagation and transplantation of host plants for Quino checkerspot butterfly.

The project owner also shall request an annual report from the San Diego Foundation or other third-party approved by the CPM documenting how each annual payment provided from the endowment required hereunder was used and applied to assist in noxious weed abatement.

Land Acquisition

B. Acquire lands within habitat occupied by Otay tarplant, Quino checkerspot butterfly, and California gnatcatcher in the amount listed for the following species: 46.93 acres of Quino checkerspot butterfly habitat, 18.57 acres of California gnatcatcher habitat, and 11.86 acres of Otay tarplant habitat. Habitat can be acquired either separately or together if suitable habitat for a combination of species can be found at the same location. If habitat is identified that benefits all three species, it shall be no less than 46.93 acres unless approved in writing by the CPM, CDFG, USFWS, and County of San Diego DPLU. The project owner shall calculate an appropriate endowment for management of the compensation habitat in perpetuity using the Center for Natural Lands Management Property Analysis Record (PAR) or PAR-like analysis. The endowment amount shall be approved by the CPM in consultation with CDFG, USFWS, and County of San Diego DPLU. Also to be provided is the name of the entity that would manage and protect the land in perpetuity.

Verification: **Option A**. At least 60 days prior to the start of project operation the project owner shall submit a final Weed Management Plan to the CPM that has been reviewed and approved by the CPM, in consultation with the CDFG, USFWS, and the County of San Diego DPLU. No less than 30 days prior the start of project operation, the project owner shall provide written verification to the CPM that the endowment has been paid in full to San Diego Foundation or other third-party approved by the CPM in accordance with this Condition of Certification. The project owner shall provide evidence that it has specified that its annual payment from the endowment to the third-party approved by the CPM can be used only to assist in noxious weed management and remediation of its effects (e.g., activities to support continued survival Quino checkerspot butterfly, California gnatcatcher, and Otay tarplant) at approved locations within critical habitat or habitat that contains the Primary Constituent Elements for these species that is protected in perpetuity.

Thereafter, within 30 days after each anniversary date of the commencement of project operation, the project owner also shall request an annual report from the San Diego Foundation or other third-party approved by the CPM documenting how each annual payment from the endowment required hereunder was used and applied to assist in noxious weed management and/or habitat restoration/enhancement at approved locations for these species. 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.

Option B. At least 60 days prior to the start of project operation the project owner shall provide to the CPM for approval, in consultation with the CDFG, USFWS, and the

County of San Diego DPLU, the name of the land management entity, written verification that the compensation lands have been purchased, and written verification that the appropriate endowment fund amount (determined by the PAR analysis) has been received by the approved endowment management entity.

Federal Biological Opinion

BIO-14 The project owner shall provide a copy of the Biological Opinion per Section 7 of the federal Endangered Species Act written by the U. S. Fish and Wildlife Service in consultation with U.S. Environmental Protection Agency. The terms and conditions contained in the Biological Opinion shall be incorporated into the project's BRMIMP and implemented by the project owner.

Verification: At least 30 days prior to the start of any pre-construction site mobilization activities, the project owner shall submit to the CPM a copy of the U.S. Fish and Wildlife Service's Biological Opinion and verification that the terms and conditions contained in the Biological Opinion are included in the BRMIMP and will be implemented by the project owner.

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BIOLOGICAL RESOURCES APPENDIX A

Mitigation acreage calculations for listed species affected by PPEC nitrogen deposition.

QUINO CHECKERSPOT BUTTERFLY

Map Zone	PPEC nitrogen deposition (kg/ha/yr)	Baseline nitrogen deposition (kg/ha/yr)	Acres of affected critical habitat	Mitigation acreage
1	0.1	11.562015	15.32	0.132502855
2	0.1	12.184465	555.2	4.556621895
3	0.1	10.401248	47.19	0.453695557
4	0.1	10.271367	20.47	0.199291876
5	0.1	10.271367	96.63	0.940770591
6	0.1	10.401248	240.88	2.315875941
7	0.2	11.562015	0.58	0.010032853
8	0.2	12.184465	397.17	6.519285008
9	0.2	10.401248	1,116.38	21.4662702
10	0.5	12.184465	86.89	3.565605876
11	0.5	10.401248	112.8	5.422426232
12	0.5	12.184465	0.47	0.019286854
13	0.5	10.401248	0.81	0.038937635
14	1.0	12.184465	14.49	1.189219223
15	1.0	10.401248	1.11	0.106717963
TOTAL ACRES			**2706.39**	**46.93654056**

OTAY TARPLANT

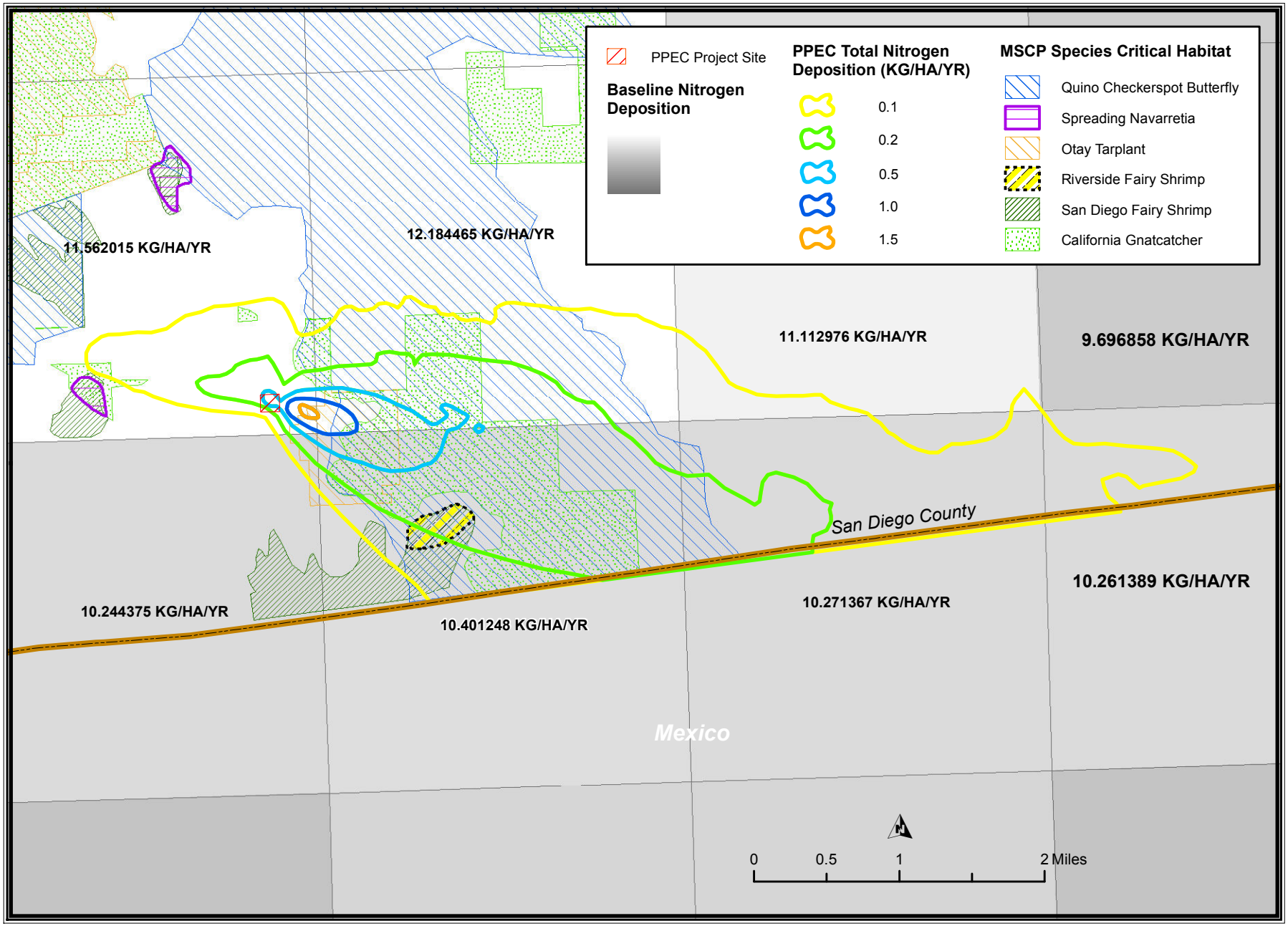
Map Zone	PPEC nitrogen deposition (kg/ha/yr)	Baseline nitrogen deposition (kg/ha/yr)	Acres of affected critical habitat	Mitigation acreage
1	0.1	10.24438	0.66	0.00644256
2	0.1	10.32281	37.83	0.366469929
3	0.2	10.73588	80.62	1.501879772
4	0.5	11.09803	137.57	6.197949216
5	1	11.38258	37.2	3.268153009
6	0.2	12.18447	8.17	0.134105191
7	1.5	11.87324	3.05	0.385320266
TOTAL ACRES			**305.1**	**11.86031994**

CALIFORNIA GNATCATCHER

Map Zone	PPEC nitrogen deposition (kg/ha/yr)	Baseline nitrogen deposition (kg/ha/yr)	Acres of affected critical habitat	Mitigation acreage
1	0.1	12.184465	91.49	0.750874166
2	0.1	11.87324	41.28	0.347672581
3	0.1	11.562015	6.15	0.05319142
4	0.1	11.562015	8.42	0.072824676
5	0.1	11.562015	4.03	0.034855516
6	0.1	10.401248	7.87	0.075663997
7	0.1	10.401248	0.91	0.00874895
8	0.1	10.401248	77.07	0.740968776
9	0.2	10.401248	854.63	16.43322032
10	0.5	11.2928565	1.27	0.056230237
TOTAL ACRES			**1093.12**	**18.57425064**

BIOLOGICAL RESOURCES - FIGURE 1

Baseline and PPEC Nitrogen Deposition with Critical Habitat



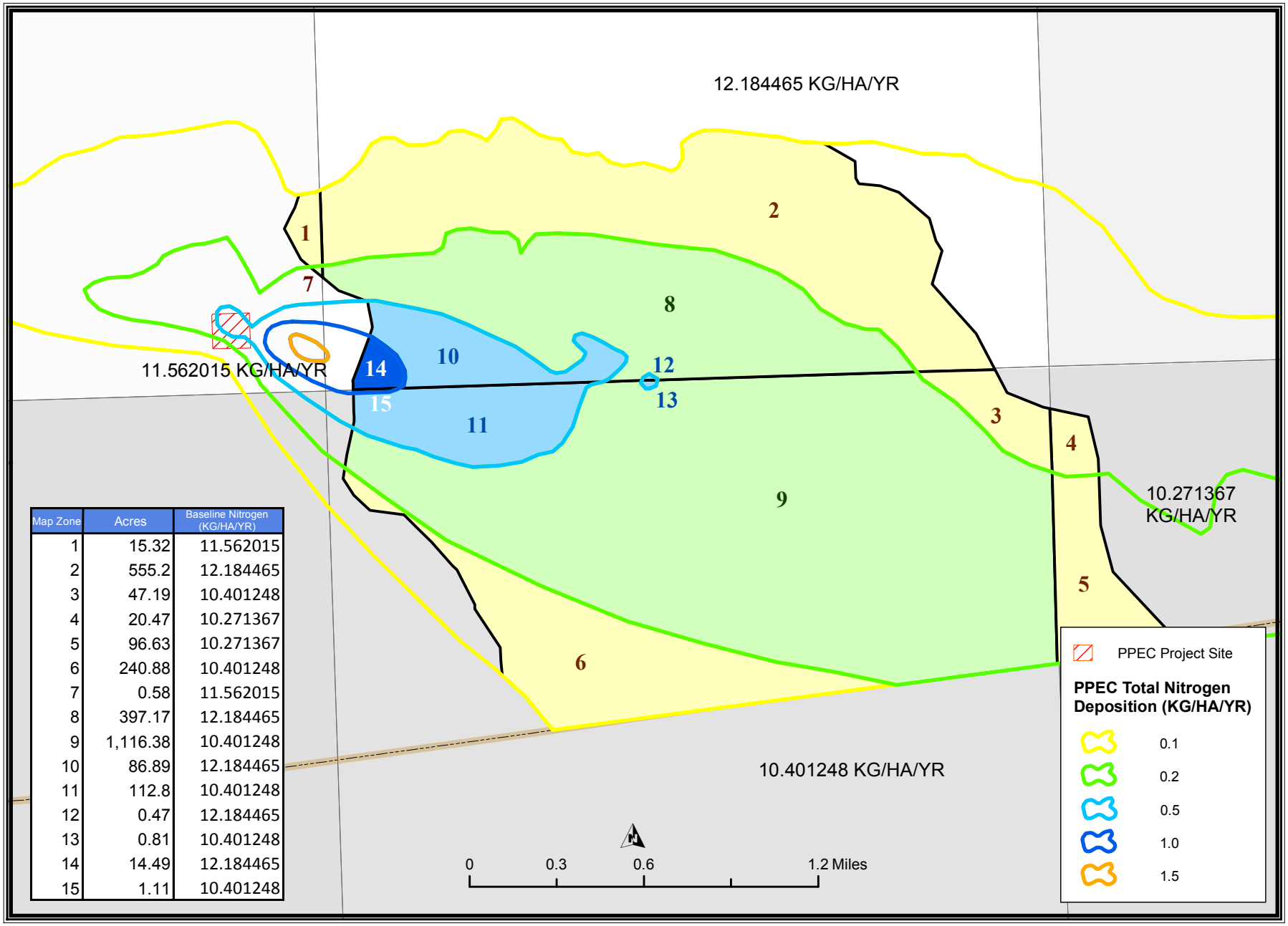
BIOLOGICAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMETAL PROTECTION DIVISION

SOURCE: University of California - Riverside, U.S. Fish. Wildlife Service, Carlsbad Fish and Wildlife Office

BIOLOGICAL RESOURCES APPENDIX A - FIGURE 1

Nitrogen Deposition Impact on Quino Checkerspot Butterfly Critical Habitat by Map Zone



Map Zone	Acres	Baseline Nitrogen (KG/HA/YR)
1	15.32	11.562015
2	555.2	12.184465
3	47.19	10.401248
4	20.47	10.271367
5	96.63	10.271367
6	240.88	10.401248
7	0.58	11.562015
8	397.17	12.184465
9	1,116.38	10.401248
10	86.89	12.184465
11	112.8	10.401248
12	0.47	12.184465
13	0.81	10.401248
14	14.49	12.184465
15	1.11	10.401248

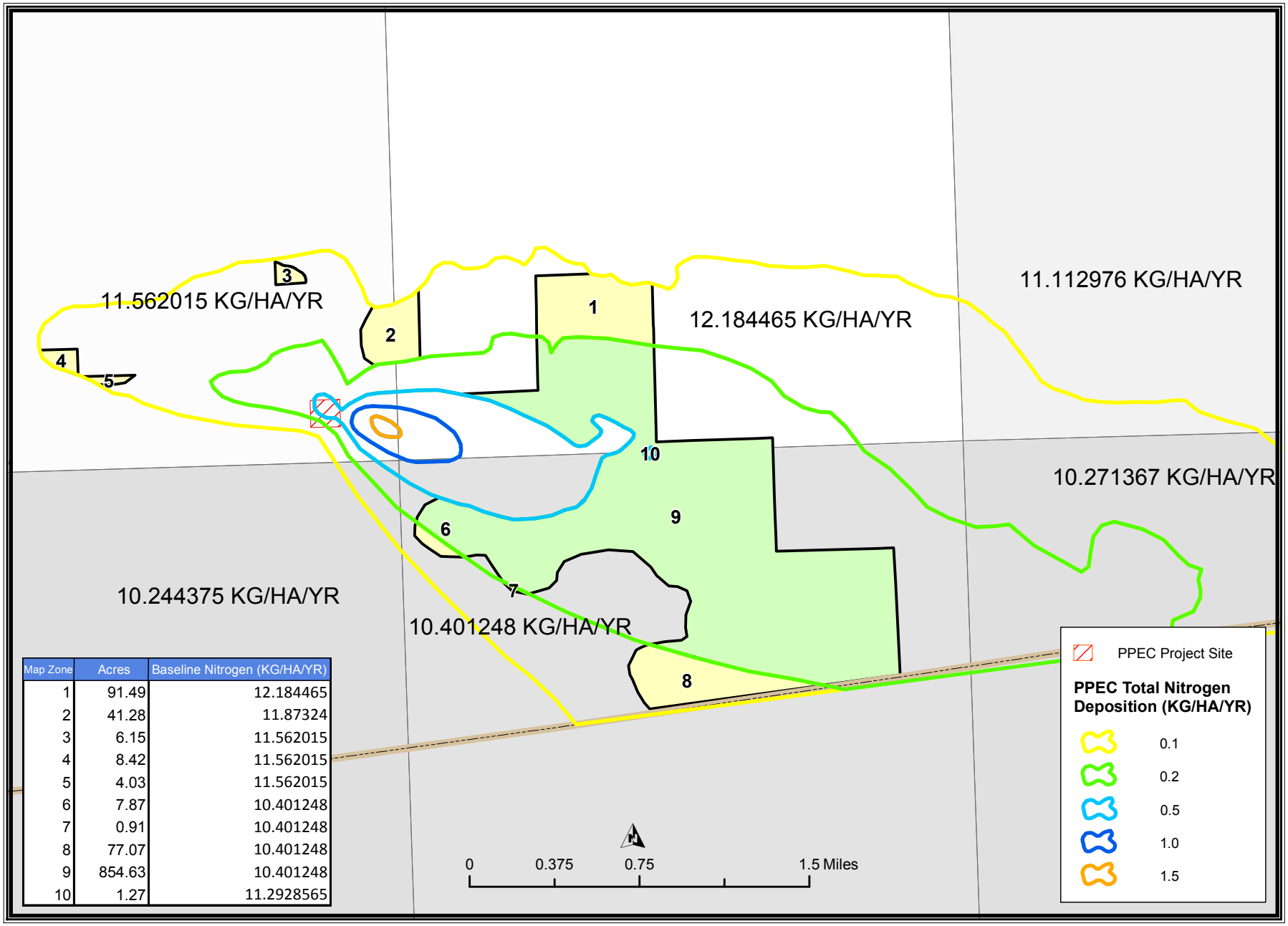
BIOLOGICAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMETAL PROTECTION DIVISION

SOURCE: University of California - Riverside, U.S. Fish. Wildlife Service, Carlsbad Fish and Wildlife Office

BIOLOGICAL RESOURCES APPENDIX A - FIGURE 3

Nitrogen Deposition Impact on California Gnatcatcher Critical Habitat by Map Zone



Map Zone	Acres	Baseline Nitrogen (KG/HA/YR)
1	91.49	12.184465
2	41.28	11.87324
3	6.15	11.562015
4	8.42	11.562015
5	4.03	11.562015
6	7.87	10.401248
7	0.91	10.401248
8	77.07	10.401248
9	854.63	10.401248
10	1.27	11.2928565

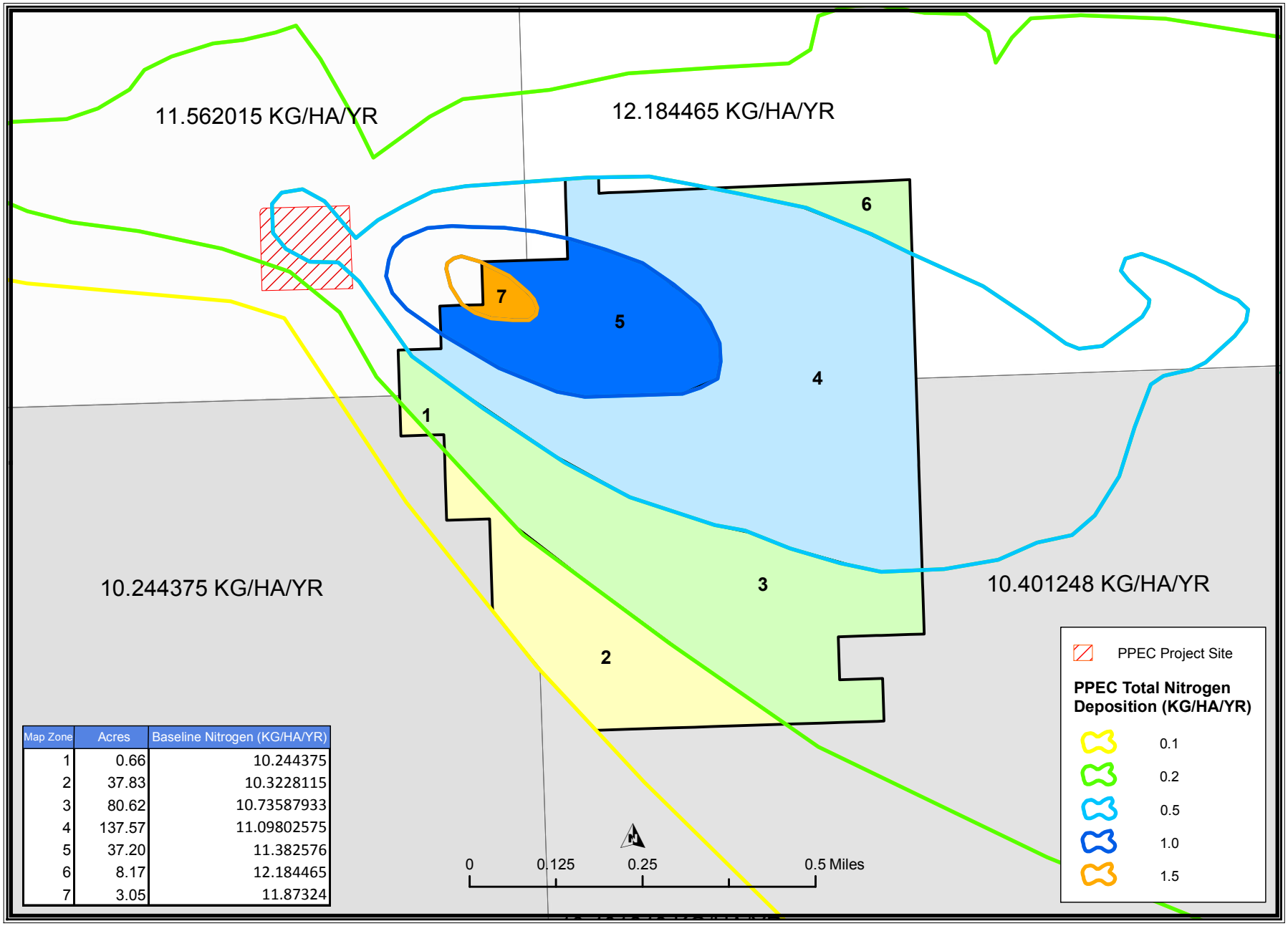
BIOLOGICAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMETAL PROTECTION DIVISION

SOURCE: University of California - Riverside, U.S. Fish. Wildlife Service, Carlsbad Fish and Wildlife Office

BIOLOGICAL RESOURCES APPENDIX A - FIGURE 2

Nitrogen Deposition Impact on California Otay Tarplant Critical Habitat by Map Zone



Map Zone	Acres	Baseline Nitrogen (KG/HA/YR)
1	0.66	10.244375
2	37.83	10.3228115
3	80.62	10.73587933
4	137.57	11.09802575
5	37.20	11.382576
6	8.17	12.184465
7	3.05	11.87324

BIOLOGICAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMETAL PROTECTION DIVISION

SOURCE: University of California - Riverside, U.S. Fish. Wildlife Service, Carlsbad Fish and Wildlife Office

CULTURAL RESOURCES

Sarah M. Allred and Thomas Gates

SUMMARY OF CONCLUSIONS

Energy Commission Cultural Resources staff has analyzed the information provided in the Application for Certification (AFC), and acquired from other sources, to determine the potential for the Pio Pico Energy Center (PPEC) to have significant adverse impacts on cultural resources in the project area, and to evaluate the project's consistency with applicable federal, state, and local laws, ordinances, regulations, and standards (LORS). Staff has recommended conditions of certification that, if implemented, will avoid or lessen any potentially significant impacts to historically significant cultural resources and ensure consistency with applicable LORS. The staff conclusions and recommended conditions of certification contained in this analysis conform to Energy Commission requirements, consistent with the California Environmental Quality Act (CEQA).

The applicant conducted a cultural resources investigation, which involved background research and pedestrian field survey of all portions of the project area of analysis. The background research revealed that one built-environment property (Historic Otay Mesa Road) and eight prehistoric archaeological sites had been previously identified and documented within the project limits. The applicant's field survey resulted in the identification of two additional built-environment properties (both residential complexes), which the applicant evaluated and did not consider to be historically significant. Staff concurs with this recommendation. No new archaeological sites were identified during the field survey, and the applicant's efforts to relocate the eight previously recorded prehistoric archaeological sites within project area were unsuccessful, as many of these resources had already been tested, excavated for data recovery, and/or monitored in advance of being wholly or partially destroyed by various construction projects in the immediate vicinity. Staff did, however, identify one previously recorded site within the project limits, site CA-SDI-10297/H, which had been previously determined to be historically significant from past investigations and is currently protected by a San Diego County open space archaeological conservation easement.

Staff concludes that one historically significant cultural resource, site CA-SDI-10297/H, is located within the Pio Pico Energy Center project limits. The site is protected by a San Diego County open space archaeological conservation easement, and must therefore be entirely avoided by the proposed PPEC project. According to the applicant's AFC submittal (PPEC 2011a, 2011d), Transmission Line Alternative Route B traverses the conservation easement area in which the site is located; however, in a more recent submittal (PPEC 2011x), the applicant has proposed to shift the alignment of Transmission Line Alternative Route B so that it runs adjacent to the north side of the open space easement area. This recent proposal is tentative, and staff has requested more information from the applicant regarding the feasibility of constructing, operating, and maintaining the transmission line in a manner that would avoid the open space conservation easement (CEC 2011x; tn 63103?). Should Transmission Line Alternative Route B be selected for the project, Condition of Certification **CUL-9** would require the

applicant to design, construct, operate, and maintain the Transmission Line Alternative Route B in a manner that would not result in any encroachment or disturbance to the archaeological site area. Implementation of Condition of Certification **CUL-9** would ensure complete avoidance of this historically significant archaeological site for the life of the project. Therefore, the proposed Pio Pico Energy Center project would have no impacts to any identified historically significant cultural resources. Furthermore, staff's proposed Conditions of Certification **CUL-1** through **CUL-8** would reduce any potential impacts to historical or unique archaeological resources accidentally discovered (unanticipated finds) during construction of the Pio Pico Energy Center project and related activities, consistent with the requirements of CEQA Guidelines section 15064.5(f), to a less than significant level.

INTRODUCTION

This staff assessment identifies the potential impacts of the Pio Pico Energy Center (PPEC) project on cultural resources within the project area. Cultural resources encompass archaeological, traditional, and built environment resources, including but not necessarily limited to buildings, structures, objects, districts, and sites. They are associated with locations of human activity, occupation, or use. They include expressions of human culture and history in the physical environment. Cultural resources also include places that are considered to be of traditional cultural or religious importance to social or cultural groups. Cultural resources are defined under state law as buildings, sites, structures, objects, areas, andplaces. Three kinds of cultural resources, classified by their origins, are considered in this assessment: prehistoric, ethnographic, and historic.

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

Ethnographic resources represent the heritage of a particular ethnic or cultural group, such as Native Americans or African, European, Latino, or Asian immigrants. They may include traditional resource-collecting areas, ceremonial sites, value-imbued landscape features, cemeteries, shrines, and ethnic neighborhoods and structures.

Historic-period resources, both archaeological and architectural, are associated with Euro-American exploration and settlement of an area and the beginning of a written historical record. They may include archaeological deposits, sites, structures, traveled ways, artifacts, or other evidence of human activity. Groupings of historic-period resources are also recognized as historic districts and as historic vernacular landscapes. Under federal and state historic preservation law, cultural resources generally must be at least 50 years old to have sufficient historical importance to merit consideration of eligibility for listing in the California Register of Historical Resources

(CRHR). A resource less than 50 years of age[1] must be of exceptional historical importance to be considered for listing.

For the PPEC project, staff provides an overview of the environmental setting and background of the project area, an inventory of the cultural resources identified in the project vicinity, and an analysis of the project's potential impacts to significant cultural resources, using criteria from the California Environmental Quality Act (CEQA) and the CEQA Guidelines.

If cultural resources are identified, staff determines which are historically significant, as defined under CEQA, and whether the PPEC project would have a significant impact on those resources. Staff's primary concern is to ensure that all potentially significant cultural resources are identified, that all potential PPEC project impacts to those resources are identified and assessed, and that conditions of certification are proposed that ensure that all significant impacts are avoided or reduced to the extent feasible.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

As required by California Code of Regulations (20 CCR 1744), Energy Commission staff must evaluate the proposed project in its entirety, including information provided by the project applicant in the AFC and associated supplements, project design, site location, and operational components, to determine if it would conflict with any applicable 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. The Energy Commission must also determine whether the project is consistent with all applicable federal, state, regional, and local laws, ordinances, regulations, and standards (LORS) [PRC §25523(d)(1)] or make specific findings that a project's approval is justified despite its nonconformity (PRC §25525). For this project, in which there is no federal involvement,[2] the LORS applicable to cultural resources are generally at the state and local level, as identified in Cultural Resources Table 1 (below).

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

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

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

Applicable Law	Description
State	
Public Resources Code 5097.98(b) and (e)	Requires a landowner on whose property Native American human remains are found to limit further development activity in the vicinity until he/she confers with the Native American Heritage Commission-identified Most Likely Descendents (MLDs) to consider treatment options. In the absence of MLDs or of a treatment acceptable to all parties, the landowner is required to reinter the remains elsewhere on the property in a location not subject to further disturbance.
California Health and Safety Code, Section 7050.5	This code makes it a misdemeanor to disturb or remove human remains found outside a cemetery. This code also requires a project owner to halt construction if human remains are discovered and to contact the county coroner.
Local: **San Diego County**	
Land Use Element of the San Diego County General Plan	http://www.sdcounty.ca.gov/dplu/docs/existgp/landuse.pdf Goal 3.1 establishes the need to "protect lands needed for preservation of natural and cultural resources; managed production of resources; and recreation, educational, and scientific activities" (County of San Diego 2003, p. II-3).
Conservation Element (Part X) of the San Diego County General Plan	http://www.sdcounty.ca.gov/dplu/docs/existgp/conservation.pdf Provides policies for the protection and treatment of cultural sites (County of San Diego 2002, pp. X-88 – X-94).
Resource Protection Ordinance (RPO)	http://www.sdcounty.ca.gov/dplu/docs/res_prot_ord.pdf Ordinance 9842, County Administrative Code 86.601 – 86.608 An ordinance codifying and amending the resource protection ordinance relating to wetlands, prehistoric, and historic sites, agricultural operations, enforcement, and other matters (County of San Diego 2007, p. 1 – 19).
San Diego County Historic Site Board, 2000	http://www.sdcounty.ca.gov/dplu/4Historic/main.html Ordinance 9139, County Administrative Code 396.5 Establishes the County Historic Site Board and its various duties (County of San Diego 2000).

San Diego County General Plan (SDCGP)

Among the environmental goals identified in the Land Use Element of the San Diego County General Plan (SDCGP), Goal 3.1 establishes the need to "protect lands needed for preservation of natural and cultural resources; managed production of resources;

and recreation, educational, and scientific activities" (County of San Diego 2003, p. II-3) The area containing the only historically significant cultural resource in the project area (site CA-SDI-10297/H), is protected by an existing San Diego County conservation easement and would not be disturbed by the project. Therefore, the project is consistent with this element of the SDCGP.

The Conservation Element (Part X) of the SDCGP provides policies for the protection and treatment of cultural sites (County of San Diego 2002, p. X-88 – X-94). These policies provide guidance for the preservation of cultural resources. Those policies that pertain to the current project are as follows. Policy 1 states that the San Diego County (County) shall take those actions which will seek to conserve and protect significant cultural resources. These actions may include land purchases, dedication of open space around cultural resources, or the formation of cultural areas to protect those fragile resources. Policy 3 states that the County shall coordinate with appropriate federal, state, and local agencies to conserve cultural resources. Policy 4 requires the County to use the Environmental Impact Report (EIR) process to conserve cultural resources. Public awareness of cultural heritage will be stressed. All information and artifacts recovered in the process will be stored in an appropriate institution and made available for public exhibit and scientific review. Lastly, Policy 5 encourages the use of open space easements in the conservation of high-value cultural resources.

Acting in the County's stead, under the Energy Commission's exclusive authority, cultural resource staff would coordinate with applicable federal, state, and local agencies as needed regarding measures to conserve and protect cultural resources impacted by the PPEC project, and has recommended Conditions of Certification **CUL-1** through **CUL-9** to ensure that cultural resources within the PPEC project area are protected in a manner consistent with these policies, including restrictions consistent with the requirements of the existing San Diego County open space conservation easement containing archaeological site CA-SDI-10297/H (described in the Cultural Resources Inventory Section below) . The power plant site certification program of the State Energy Resources Conservation and Development Commission (Energy Commission), under Chapter 6 of the Warren-Alquist Act, commencing with Public Resources Code (PRC) § 25500, is deemed an equivalent CEQA process, and the Staff Assessment prepared as part of that certification program and consistent with PRC §21080.5, is considered an equivalent substitute document in lieu of an EIR, under the Certified State Regulatory Program Exemption [CEQA Guidelines §15251(l)]. Therefore, this analysis and the ensuing certification process meet the requirements of SDCGP Policy 4. Therefore, the project is consistent with all the applicable requirements of the SDCGP Conservation Element.

San Diego County Resource Protection Ordinance

According to San Diego County's *Guidelines for Determining Significance of Cultural Resources*, the majority of development in San Diego County (County) is subject to the County's Resource Protection Ordinance (RPO). This ordinance requires that cultural resources be evaluated as part of the County's discretionary environmental review process and if any resources are determined significant under the RPO, they must be preserved (County of San Diego 2007b, pp. 1 - 19). The RPO prohibits development,

trenching, grading, clearing and grubbing, or any other activity or use that may result in damage to significant prehistoric or historic site lands, except for scientific investigations with an approved research design prepared by an archaeologist certified by the Register of Professional Archaeologists. As noted above, the Energy Commission power plant site certification program is equivalent to the County's discretionary environmental review process and the criteria used in the Staff Assessment to determine significance is consistent with the County's RPO requirements.

Ordinance 9493, County Administrative Code 396.7

San Diego County also has a Historic Site Board, which serves as an advisory board to County decision makers (County of San Diego 2000). The Board reviews historic resources (including archaeological resources) for landmarking, participation in the Mills Act, and conformance with the Secretary of Interior Standards. They consider project design and mitigation measures for resources identified during environmental review of discretionary permits. In addition, the Board reviews legislation and the various cultural resource programs that are proposed for the County of San Diego. Staff has added the San Diego County Historic Site Board to the list of entities who will receive a copy of the Preliminary Staff Assessment to ensure that the Board has an opportunity to review and comment on this cultural resources analysis.

PROJECT SETTING AND DESCRIPTION

Information provided regarding the setting of the proposed PPEC project places it within its geographical and environmental context and specifies the technical description of the project. Additionally, the prehistoric, ethnographic, and historical background provides the context for the evaluation of the CRHR eligibility of any identified cultural resources within staff's area of analysis for this project.

REGIONAL SETTING

The PPEC project area is located within an unincorporated area of southern San Diego County known as Otay Mesa. The project site is approximately two miles east of the South Bay Expressway (Highway 125), one mile north of State Route 11, and approximately 1.5 miles north of the U.S. – Mexico border (PPEC 2011a, vol. I, p. 5.8-3). The project area lies within the northwest quarter of the southeast quarter of Section 30 of the *Otay Mesa* United States Geological Survey (USGS) 7.5-minute quadrangle (Township 18 South, Range 1 East).

The project is within the County's Otay Subregional Planning Area (PPEC 2011a, vol. 1, p. 5.9-3). Adjacent incorporated jurisdictions include the City of San Diego to the west and the City of Chula Vista to the northwest. The project area is in a mixed rural and industrial setting with zoning and general plan designations in the immediate vicinity that allow for mostly planned industrial uses; however, outlying areas contain a mix of land use designations that allow commercial, residential, and open space uses (PPEC 2011a, vol.1, p. 5.9-3).

PROJECT SITE AND VICINITY DESCRIPTION

The primary land uses and sources of previous surface and/or subsurface disturbances in and around the project area include agricultural activities (grading, plowing and/or planting), energy facility and transmission line developments, the construction of public and private buildings and structures (industrial and rural), installation of underground utilities (gas, water, etc.), off-road vehicle tracks, and roadway construction (PPEC 2011d, DA Supplement, p. 3-2). Existing land uses adjacent to the site include disturbed, undeveloped, industrially-zoned land to the immediate north and west, and similar land zoned for technology-business park purposes to the south. Two correctional facilities (state and county) are also located north of the project site (PPEC 2011a, vol. 1, p. 5.9-4). The Calpine Otay Mesa Generating Plant, which was licensed by the Energy Commission in 2001, lies directly adjacent and to the east of the proposed PPEC plant site.

The project site itself is currently vacant and disturbed. Under a County of San Diego Grading Permit (no. 2700-1555), the landowner/industrial park developer had excavated and graded the proposed PPEC plant site and laydown area earlier this year (PPEC 2011a, vol. 1, p. 3-5, and PPEC 2011l, p. 6). The project site elevation, which was formerly between 630 and 660 feet above mean sea level (amsl), is now uniformly about 635 feet amsl, as a result of recent excavation in and around the project area .

An Archaeological Conservation Easement area (*Easement in Favor of the County of San Diego for Archaeological Conservation, recorded September 13, 2001 as File No. 2001-0657833, O.R.*) exists within a portion of the project area where Transmission Line Alternative Route B is proposed. The language of the easement specifically prohibits the following activities on any portion of the land subject to the easement: grading; excavation; placement of soil, sand, rock, gravel or other material; clearing of vegetation; construction, erection or placement of any building or structure; vehicular activities; trash dumping; or use for any purpose other than as open space. The sole exceptions to the restrictions include: scientific investigations by professional archaeologists; implementation of a site capping plan; or implementation of a grading, monitoring, and data recovery plan prior to the issuance of a grading permit by the County. The archaeological easement area also overlaps with a biological conservation easement area (see Biology Section for more details), all of which are currently bordered by protective fencing.

PROJECT DESCRIPTION

The Pio Pico Energy Center, LLC, proposes to construct the Pio Pico Energy Center (PPEC) project, which would be a simple-cycle electrical generating facility. The proposed project includes the plant site, which is situated on 9.99 acres of land, and a laydown area that includes an additional 6.0 acres of land on an adjacent parcel that is contiguous with the proposed plant site. The project would also require the construction of new linear facilities, including approximately 8,000 – 10,300 feet of natural gas pipeline and approximately 2,100 – 2,650 feet of electrical transmission line, depending on which of the alternatives are selected (PPEC 2011a, AFC, Vol. I, pp. 3-1 – 3-4). The

maximum area of construction disturbance (i.e., if the longest natural gas pipeline and transmission line routes are installed) would be approximately 32.68 acres (PPEC 2011a, AFC, vol. I, p. 3-7). The project would also necessitate the reconductoring of a portion of an existing transmission line (see Appendix X?).

The applicant provided the following information regarding the depth and extent of ground disturbance of the various project elements in response to Data Request CUL-32 (PPEC 2011k, Applicant's Responses to Commission Staff Data Request Set 1). The maximum depth of ground disturbance below the current grade of the project site would be an additional 9.4 feet to accommodate the buried electrical duct bank. The proposed depth of ground disturbance below the 6.0-acre laydown area would entail grading to a maximum depth of one foot. Construction of the natural gas pipeline would require the excavation of a trench approximately 2 feet wide and a minimum of 4.75 feet deep. The trench could be deeper in some locations, depending on any substructures encountered. The tie-in locations for the gas pipeline would require excavation of approximately 8 feet wide by 20 feet long by 9 feet deep. The Route A alternative for the transmission line includes a segment that would be constructed underground. The dimensions of the trench for the underground segment would be approximately 6 feet deep and a maximum of 8 feet wide. The extent of ground disturbance for the installation of transmission power poles would be 6 feet in diameter and 20 feet deep for the tangent structures (maximum of 3) and 8 feet diameter by 30 feet deep for the dead end structures (quantity 3). The tallest structural features of the proposed plant site are the combustion turbine generator stacks (quantity 3), which would extend to 100 feet above the baseline grade (PPEC 2011a, vol. I, p. 3-6 and p. 3-31).

ENVIRONMENTAL SETTING

Because the prehistoric inhabitants of California were entirely dependent upon the natural resources available to them, their lifeways can only begin to be understood with reference to the land and climate in which they lived. Thus, knowledge of the project's environmental setting, as well as how the setting may have changed over the span of human occupation, is essential to the understanding of prehistory.

California's landscapes are widely varied and the state is divided into 11 geomorphic provinces that reflect the unique topographic-geologic features of each area (Norris and Webb 1990). The PPEC project lies within the Peninsular Ranges Geomorphic Province, which continues south nearly 800 miles as the Peninsula of Baja California, producing one of the largest geologic units in western North America. The Peninsular Ranges Geomorphic Province is bound to the north by the Transverse Ranges and the Los Angeles Basin and on the east by the Colorado Desert and the Gulf of California (Norris and Webb 1990).

Geomorphic processes have played a major role in the differential preservation of archaeological sites throughout California (PPEC 2011l, p. 1). Paleo-Indian sites (ca. 13,500 – 10,500 before present [B.P.]) and Lower Archaic sites (ca. 10,500 – 7500 B.P.) are extremely rare throughout California, but are more well represented in the San Diego region (e.g., "San Dieguito Complex") due to the preservation of relatively stable non-depositional Pleiocene and Pleistocene terraces near the coast and older desert

landforms inland (PPEC 2011l, p.1; Abbott 1999). In general, most Pleistocene-age landforms have little potential for harboring archaeological deposits as they developed prior to human migration into North American (ca. 13,500 B.P.). However, Pleistocene surfaces buried below younger Holocene deposits do have a potential for containing archaeological deposits. Holocene alluvial deposits may contain paleosols (well-developed buried soils) that represent periods of landform stability prior to renewed deposition. Holocene-age landforms represent formerly stable surfaces that have a potential for preserving archaeological deposits (PPEC 2011l, p. 2).

The PPEC project area is situated on the relatively flat to gently sloping terrace of Otay Mesa, which is one of the highest and oldest marine terraces in the San Diego area (PPEC 2011l). No major drainages, which could lead to major alluvial deposition, cross this portion of Otay Mesa; however, smaller incised drainages are present, which are largely erosional and transport sediment from the mesa further downslope. Soil mapping of the area (USDA 1973) indicates that the project components are primarily underlain by Diablo series soils, which are clay-rich expansive soils derived from soft calcareous sandstone and shales (e.g., the Otay Formation). Within the San Diego region, Diablo series soils are typified by a simple pedogenic profile that ranges from 20 to 37 inches to contact with decomposed sandstone bedrock (PPEC 2011l, p. 3). This simple shallow soil profile indicates that there are no buried paleosols and that the soils within the project area are formed directly from weathered Otay Formation sediments. This is consistent with the geologic mapping of the area and indicates that the landform upon which the PPEC will be sited has remained stable and/or erosional since the original deposition of the Otay Formation geologic unit in the Oligocene to Miocene (33.9 – 5.3 million years ago) (PPEC 2011l, p. 3).

The archaeological record also appears to be consistent with the findings that Otay Mesa has remained largely stable and/or erosional throughout the period of known human occupation. The results of numerous archaeological excavations on Otay Mesa, in the vicinity of the PPEC project, support the assumed lack of paleosols and buried landforms based on geologic and soils mapping (PPEC 2011l, p. 3). While subsurface artifacts have been identified at sites on the Otay Mesa, they are generally understood to be the result of down-mixing from the surface through modern mechanical, biological, and pedogenic[3] processes, rather than stratified in-situ deposits (PPEC 2011l, p. 4).

In terms of climate change in the region during the course of human prehistory, studies indicate that, during the final period of glaciation (approximately 11,000 to 10,000 years Before Present [BP]), the sea level was considerably lower than it is currently; the coastline at that time would have been two to two and one-half miles west of its present location (Brian Smith and Associates 2005, p. 3.0-2). At approximately 7,000 years BP, the sea level rose rapidly, filling in many coastal canyons that had been dry during the glacial period. The period between 7,000 and 4,000 years BP was characterized by conditions that were drier and warmer than previously, followed by a cooler, moister environment, similar to the present-day climate (Brian Smith and Associates 2005, p. 3.0-2).

[3] The natural process of soil development, little influenced by humans.

PREHISTORIC BACKGROUND

There is currently no widely accepted evidence to substantiate the argument for human occupation in San Diego County prior to 12,000 BP, and evidence for Paleo-Indian (12,000 to 8,000 BP) occupation of southern California, particularly in the coastal areas, remains minimal (PPEC 2011d, p. 4-2; Byrd and Raab 2007, p. 217). According to Gallegos and Associates (2007, p. 1-5), the body of current research for precontact Native American occupation in San Diego County recognizes the existence of at least two major cultural traditions: the Archaic/Early Period (10,000 – 1,300 BP) and the Late Period (1,300 BP to historic contact).

Archaic/Early Period (10,000 – 1,300 BP)

Archaic/Early Period sites from 10,000 to 1,300 years ago within San Diego County comprise a range of sites that include coastal and inland valley habitation sites, inland hunting and milling camps, and quarry sites, usually in association with fine-grained metavolcanic material (Gallegos and Associates 2007, p. 1-10). Artifact assemblages from this long period are similar in many respects, and while various cultural traits developed or disappeared during this span of time, there is a clear pattern of cultural continuity during the Archaic/Early Period (Gallegos and Associates 2007, p. 1-10). The Archaic/Early Period includes the San Dieguito, La Jolla, and Pauma Complexes, which, according to Gallegos and Associates (2007, p. 1-7), are poorly defined, as are the interrelationships between contemporaneous inland, desert, and coastal assemblages.

Prehistoric peoples, to whom the San Dieguito Complex is attributed, are best characterized as hunters and gatherers possessing a relatively diverse and non-specialized economy in which relatively mobile bands accessed and used a wide range of plant, animal, and lithic resources. This cultural pattern is generally thought to have resulted from the gradual shift away from a herd-based hunting focus (attributed to the earlier Paleo-Indian Tradition) to a more diverse and area-specific economy (Gallegos and Associates 2007, p. 1-8). The material culture associated with the San Dieguito Complex includes flaked stone tools, such as large percussion-flaked bifaces, scraper planes, small domed scrapers, knives, choppers, and crescentics (PPEC 2011d, p. 4-2).

The La Jolla Complex refers to Archaic period coastal sites, primarily along the margins of terraces overlooking coastal lagoons and protected bays in San Diego County, that possess a clear emphasis on the procurement of fish, marine mollusk, plant, and small mammal resources (PPEC 2011d, p. 4-2). La Jolla sites are characterized by the presence of shell middens, manos, basin metates, cobble tools, discoidals, drills, and polished stone artifacts, as well as steep-angled and crude percussion flake scrapers, choppers, and hammerstones (PPEC 2011d, p. 4-2). The Pauma Complex refers to non-coastal sites that contain a predominance of grinding implements (manos and metates), a general lack of shellfish remains, a greater variety of tools, and an apparent emphasis on both gathering and hunting (Gallegos and Associates 2007, p. 1-9). Traditional archaeological chronologies identify the La Jolla and Pauma complexes as following the San Dieguito Complex; however, they may simply represent seasonal or geographic variations of the somewhat older and more general San Dieguito complex (Gallegos and Associates 2007, p. 1-10).

Late Period (1,300 BP – Historic Contact)

The Late Period (ca. 1,300 BP), marks the emergence of a material culture pattern in the archaeological record that is similar to that of the Historic Period Native Americans (Gallegos and Associates 2007, p. 1-10). Artifact assemblages and sites associated with the Late Period include small projectile points, pottery, the presence of obsidian from the Imperial Valley source, Obsidian Butte, a proliferation of acorn processing sites in the uplands, and permanent or semi-permanent seasonal habitation sites (Gallegos and Associates 2007, p. 1-10). Gallegos and Associates (2007) suggest that Late Period sites reflect a gradual population increase within the region and a more intensive and efficient exploitation of local resources.

ETHNOGRAPHIC BACKGROUND

The PPEC project is located within the ethnographic territory historically attributed to the Tipai, which is the southern division of a group of Yuman-speaking peoples who occupied the southern extreme of California and adjoining portions of northern Baja California at the time of first contact with Europeans (Luomala 1978, p. 592). The Tipai, together with the Ipai (the northern division of the group), were referred to as the Diegueño by the Spaniards and later referred to as the Kumeyaay, a linguistic term given to the specific Hokan language of the region (PPEC 2011d, p. 4-3).

As summarized in the AFC (PPEC 2011d, p. 4-3), the ethnographic literature describes the Kumeyaay (Ipai and Tipai) as hunter-gatherers, organized by patrilineal, patrilocal residential groups who claimed prescribed territories. Settlement patterns are best characterized as central-based nomadism, dependent upon seasonality, band territory, and the availability of resources within a territory. Settlements consisted of temporary campsites, as well as large, semi-permanent villages. Temporary encampments consisted of simple windbreaks, while semi-permanent settlements contained dome-shaped thatched pole frameworks covered with willow branches and tule reeds. These dwellings had excavated floors and central hearths.

Gallegos and Associates (2007, p. 1-10) indicate that the Late Period cultural patterns observed among the Kumeyaay were shared with other cultural groups along the northern and eastern periphery of San Diego County. This transference and melding of cultural traits between neighboring groups makes positive association of archaeological deposits with particular ethnographically-known cultures difficult, particularly within San Diego County. While archaeologists rely heavily on the ethnographic accounts of group boundaries as recorded during the historic period, it is not known how long these boundaries had been in place or the validity of these boundaries as presently reported (Gallegos and Associates 2007, p. 1-11). As discussed by Byrd and Raab (2007, p. 226), California's prehistoric past was complex, multi-directional, and multi-causal, and while the ethnohistoric data on native California, based on early twentieth-century interviews, is important in understanding how historic native groups adapted to the study region, such information also has limitations when attempting to understand much older time periods.

HISTORIC BACKGROUND

In December 2008, the City of San Diego completed a historic context statement and historic resources survey for the Otay Mesa Community Plan Update area (City of San Diego 2008), which lies directly west of the PPEC project site, with portions of the linear facilities extending into the Community Plan Update area. Investigations for the Otay Mesa historic context statement included both archival research and reconnaissance survey of the plan area. Archival research included an examination of a number of primary and secondary sources of information pertaining specifically to the Otay Mesa area, including historic maps and photographs, aerial photographs, previous cultural resources studies, building evaluation reports, and masters theses. Given the close proximity of the PPEC project to the Otay Mesa Community Plan Update area and its corresponding historic relevance, staff relies on the information provided in the historic context statement of the Otay Mesa Community Plan Update (City of San Diego 2008) for the following historic background summary. Significant themes in Otay Mesa's history pertain mainly to Homesteading/Agriculture and Military/Aviation uses.

Spanish Period (1769 to 1821)

During the Spanish Period, Otay Mesa was placed under the jurisdiction of the Mission San Diego de Alcala, at which time the dominant land uses consisted of agriculture and livestock grazing. While the surrounding areas began to be settled during this time, Otay Mesa, itself, remained relatively undeveloped in its natural state. In the late 1820s and early 1830s, a decline in the Mission's economic strength corresponded with a rise of ranchos in the area. While ranchos were located within close proximity to Otay Mesa, no ranchos existed on the mesa during the Spanish period.

Mexican Period (1821 to 1848)

During the Mexican period, Rancho Otay, which encompassed 6,657 acres, was established. The grant area extended along the Otay River, just west of Lower Otay Reservoir. The PPEC project area lies south of the rancho boundary. The economy of Rancho Otay, as with other ranchos, relied on the sale of hide and tallow, as well as sheep, livestock grazing, grain crops, and wine grape sales. The rancho system began to dissolve following the Mexican-American war of 1845 and the establishment of California statehood. Many of the ranchos were subsequently divided or broken up.

American Period (1848 to the present)

With the establishment of the Homestead Act of 1862, an influx of American settlers arrived in the area seeking to establish homesteads and farms on vacant federal lands at little or no cost. In addition, in anticipation of a railroad connection between San Diego County and the transcontinental Santa Fe line at Barstow, land speculators began to buy up land in San Diego County, resulting in a land boom in the region during the 1880s. Otay Mesa was promoted as a rich agricultural resource, and promoters announced plans to establish irrigation districts and construct reservoirs and pipelines, none of which would begin to occur until the 1950s and 1960s. The first settlers arrived on Otay Mesa in 1870 and began to cultivate a variety of crops, including wheat, barley, corn, tomatoes, and beans, relying on wells and rainwater storage as the main source of water. Between 1885 and 1890, the rural farming community of Otay Mesa became

an established community with a school, a post office, a store, a blacksmith shop, and a church; however, between 1900 and 1920, a drought brought a decline in the number of residents living on Otay Mesa. The Great Depression of the 1930s also took its toll on the community, and some farmers were forced to sell their land to those who remained on the mesa. Some portions of the mesa were leased and farmed by non-residents. The use of wells, cisterns, catchments, and water wagons for crop cultivation and grazing continued until 1961 when a water district was established. Limited farming and agricultural uses continued on Otay Mesa into the second half of the 20th Century; however, the area subsequently began to transition into industrial uses thereafter.

The history of aviation is closely tied to the Otay Mesa. In 1883, John Joseph Montgomery made the world's first controlled flight with a fixed curve-wing glider from the top of a hill on Otay Mesa. In 1918, the Army Air Corps established an airfield along Otay Mesa Road known as East Field to provide advanced training for pilots during World War I. The location of an airfield on Otay Mesa was ideal during periods of mist and fog when flying was difficult at coastal Navy fields. The facility was temporary and came under caretaker status following World War I; however, in the 1920s, the US Navy began using the East Field as a practice landing strip. In 1935, the Army transferred East Field to the Navy, and the facility became known as Navy Auxiliary Air Station, Otay Mesa. In 1943, the base was renamed Brown Field in memory of Commander Melville Stuart Brown, killed in a plane crash in 1936. The base operated as a training facility for the Navy during World War II, at which time the facility was expanded and numerous improvements were made. Following World War II, activities at Brown Field were reduced, and the Navy leased the facility to San Diego County for possible development as a municipal airport. With the onset of the Korean War in 1951, Brown Field was again reopened as an auxiliary landing field to Naval Air Station San Diego, and more renovations and expansions occurred. Following the Korean War, activities at Brown Field were once again reduced. In 1961, the San Diego City Council voted to acquire Brown Field for use as a general aviation facility, and the City took possession of Brown Field in 1962. The conversion of Brown Field to a general aviation airport brought various small businesses, flying schools, aircraft maintenance shops, and a commercial pilot's school. In addition, some federal agencies, such as the Border Patrol and US Customs Service also became associated with the airport, due to its proximity to the US border with Mexico.

Otay Mesa was annexed to the City of San Diego in 1956. By the 1980s, the City rezoned most of Otay Mesa from agriculture to commercial-industrial, and a variety of industrial/manufacturing uses moved to Otay Mesa, including business parks, auto wrecking yards, warehouses, US Customs offices and Border Control facilities, and energy facilities.

CULTURAL RESOURCES INVENTORY

A project-specific cultural resources inventory is a necessary step in staff's effort to determine whether the proposed project may cause significant impacts to historically significant cultural resources and would therefore, under CEQA, have an adverse effect on the environment.

The development of a cultural resources inventory entails working through a sequence of investigatory phases. Generally, the research process proceeds from the known to the unknown. These phases typically involve conducting background research to identify any known cultural resources, consulting with knowledgeable parties regarding the potential presence of cultural resources, conducting fieldwork to collect requisite primary data on previously-unidentified cultural resources in the proposed project, assessing the results of any geotechnical studies or environmental assessments completed for the proposed project site, and compiling recommendations or determinations of historical significance (see "Determining the Historical Significance of Cultural Resources," below) for any cultural resources that are identified. Despite exhaustive procedures for establishing complete inventories, inadvertent discovery remains a distinct possibility for many projects.

This subsection describes the research methods used by the applicant and Energy Commission cultural resources staff for each phase and provides the results of the research, including literature and records searches (California Historical Resources Information System (CHRIS) and local records), archival research, communications with Native American representatives, ethnographic research, and field investigations. Staff provides a description of each identified cultural resource, its historical significance, and the basis for its significance evaluation. Assessments of the project's impacts on historically significant cultural resources, potential impacts on previously unidentified, buried archaeological resources, and proposed mitigation measures for all significant impacts are presented in a separate subsection below.

PROJECT AREA OF ANALYSIS

The inventory of cultural resources within what staff defines as the appropriate area for the analysis of a project's potential impacts is the first step in the assessment of whether the proposed project may cause a significant impact to an important cultural resource and, therefore, have an adverse effect on the environment.

The area that staff considers when identifying and assessing impacts to important cultural resources is a composite geographic area called the "Project Area of Analysis." The project area of analysis is defined as the area within and surrounding the project site, laydown area, and all associated linear facility corridors. This includes all areas (both horizontally and vertically) where physical project activities could occur, including the full extent of all project components and alternatives. It also includes any cultural resources not within the area described above that could sustain direct or indirect nonphysical effects (such as visual, auditory, and/or atmospheric effects) as a result of the project or that may be identified by a consulting party, organization, governmental entity, or individual through consultation as having significance or being a resource of concern. No specific resources or areas of concern for the PPEC project have, however, been identified by consulting parties to date.

The project area of analysis is defined as a specific area within and surrounding the project site and associated linear facility corridors. For this project, staff has defined a project area of analysis as follows:

1. For archaeological resources, the project area of analysis for the PPEC project is defined as the project site footprint, plus a buffer of 200 feet out from the perimeter boundary, and the project linear facilities corridors, plus 50 feet to either side of the corridor. It also extends subsurface to the maximum depth of construction activities for all plant site and/or laydown area excavations and pipeline installation trenches, as described by the applicant in Data Response CUL-32 (PPEC, July 2011k).
2. For ethnographic resources, the project area of analysis is expanded to take into account traditional use areas and traditional cultural properties, which may be far-ranging, including views that contribute to the historical significance of the properties. The Native American Heritage Commission (NAHC) assists project cultural resources consultants and staff in identifying these resources and the Native Americans with specific information about said resources. Information received from Native Americans and other ethnic or community groups may contribute to defining the area of analysis. For the PPEC project, staff has identified no ethnographic resources. and therefore, no separate ethnographic area of analysis is defined for this project. .
3. For built-environment resources, the project area of analysis for the PPEC project is minimally defined as one parcel deep from the project site footprint in urban areas; however, in rural areas, such as the PPEC project, the built-environment area of analysis is expanded to include a 0.5-mile radius from the project site, and from any above-ground linear facilities, to encompass resources whose setting could be adversely affected by industrial development.
4. For a historic district or a cultural landscape, staff defines the area of analysis based on the particulars of each siting case. No historic district or cultural landscape has been identified for the PPEC project; therefore, no area of analysis for such resources has been defined.

As used by staff, the term “project areas” means the footprints of all project components, including the plant site itself, the laydown area(s), all linear facility corridors, and all additional areas beyond that footprint that would be necessary to construct the project, including but not limited to parking areas, driving, equipment/materials staging, access roads and borrow, and disposal sites.

BACKGROUND INVENTORY RESEARCH

Various repositories in California hold compilations of information on the locations and descriptions of cultural resources, older than 45 years, that have been identified and recorded in past cultural resources inventories. The Energy Commission’s Data Regulations require applicants to acquire information from repositories specific to the vicinity of their project and provide it to staff as part of the AFC submittal. Additionally, to acquire further information on potential cultural resources in the project vicinity, the applicant is required to make inquiries of knowledgeable individuals in local agencies and organizations and of Native Americans with traditional ties to the project area. The following presents the results of the background research conducted for the PPEC project.

California Historic Resources Information System (CHRIS) Literature Search

The California Historical Resources Information System, or CHRIS, is a federation of 11 independent cultural resources data repositories overseen by the California State Office of Historic Preservation. These centers are located around the state, and each holds information about the cultural resources of several surrounding counties. Qualified cultural resources professionals obtain data on known resources from these centers and in turn submit new data from their ongoing research to the centers.

CHRIS Literature Search Results

For the PPEC project area, the applicant commissioned a literature and records search of the files at the South Coastal Information Center (SCIC) in San Diego, which maintains the database of all previous cultural resources investigations and known sites for San Diego and other nearby counties in the region. The records search, which was conducted on November 16, 2010, encompassed the project site, laydown area, and all linear facility alternatives, as well as a one-mile radius around the project site and laydown area and a one-quarter mile radius on either side of the various proposed linear facility corridors.

The results of the November 16, 2010 literature and records search revealed that 105 previous cultural resources investigations have occurred within the records search radius of the project area between 1974 and 2010. Of these previous investigations, 44 were found to have been conducted wholly or partially within the PPEC project site, laydown area, and/or linear facility corridors (eight within the project area and 36 within the linear facility corridors). Based on a Geographic Information System (GIS) analysis of the extent of previous cultural resources investigations, it was determined that 100 percent of the PPEC project area had been previously surveyed for cultural resources as a cumulative result of these past investigations (PPEC 2011k, Data Response CUL-31).

The SCIC reported 83 previously recorded cultural resource sites within the one-mile search radius of the project site and the one-quarter mile search radius of the linear facilities. Of these, 10 previously recorded cultural resources were identified within or partially within the project site, laydown area, and/or linear facility corridors.

On May 5, 2011, the applicant commissioned a second records and literature search from the SCIC in response to a change in the location of the proposed Gas Line Alternative Route A (now referred to as “Modified Gas Line Route A”) for the project (see PPEC 2011h). According to the SCIC, there is one additional previous cultural resources investigation and one additional previously recorded site within the one-quarter-mile radius of the new Modified Gas Line Route A (along Enrico Fermi Drive), in addition to the previous investigations and sites identified in the search radius during the November 16, 2010 records search. Two cultural resources, previously identified within the original Gas Line Route A area, are no longer within the project area of analysis. Therefore, considering the omission of the original Gas Line Route A area and the addition of the new Modified Gas Line Route A area, there are now a total of **nine** previously recorded cultural resources within the various components of the PPEC project area, as listed in Cultural Resources Table 2 (below). Among the previously

recorded resources in the PPEC project area, one is a historic-era built-environment resource (Historic Otay Mesa Road), while the remaining eight are prehistoric archaeological sites.

CULTURAL RESOURCES TABLE 2
Previously Identified Cultural Resources within the PPEC Project Area

Resource Identifier	Description	Location within PPEC Project
P-37-031491	Historic Otay Mesa Road	Natural Gas Line Route B
CA-SDI-7215	Prehistoric Archaeological Site	Project Site, Laydown Area, and Portions of Transmission Line Routes A & B
CA-SDI-10067	Prehistoric Archaeological Site	Modified Natural Gas Line Route A
CA-SDI-10297/H	Prehistoric Archaeological Site with historic-era component	Transmission Line Route B
CA-SDI-10298	Prehistoric Archaeological Site	Transmission Line Route A
CA-SDI-12337	Prehistoric Archaeological Site	Natural Gas Line Route B
CA-SDI-12872	Prehistoric Archaeological Site	Natural Gas Line Route B
CA-SDI-12879	Prehistoric Archaeological Site	Modified Natural Gas Line Route A
CA-SDI-12881	Prehistoric Archaeological Site	Modified Natural Gas Line Route A

Staff has reviewed and analyzed the site records and technical reports obtained from the SCIC. The history of recordation and treatment of each resource that has been previously documented within the PPEC project limits is discussed below.

P-37-031491 Historic Otay Mesa Road

This built-environment resource lies within the Gas Line Alternative Route B portion of the PPEC project area. Based on the records and literature review from the SCIC, the Historic Otay Mesa Road was first documented as a resource by Mary Robbins-Wade in August 2010; however, the road was not evaluated for eligibility as a historical resource for the purposes of CEQA at that time. According to Robbins-Wade, the earliest maps depicting Otay Mesa Road include the 1903 Cuyamaca quadrangle and the 1904 USGS San Diego quadrangle (Robbins-Wade 2010). Otay Mesa Road connected Otay Mesa to Nestor, South San Diego, and the Tijuana River Valley from approximately Paseo de la Fuente Rd on the east to Beyer Boulevard (at I-905) on the west, a distance of about nine miles. Much of Otay Mesa Road is now the alignment of State Route 905. The majority of the road alignment has remained the same, with the exception of a slight difference from the earlier alignment near Moody Canyon (Robbins-Wade 2010).

CA-SDI-7215 Prehistoric Archaeological Site

This resource lies within the plant site and laydown areas of the PPEC project, as well as portions of Transmission Line Routes A and B and Modified Gas Line Route A. The site boundaries also extend to adjacent areas beyond the project limits. Based on the records and literature review from the SCIC, site CA-SDI-7215 was first documented in May 1979 by Vicki Taton. The site was plotted on the east side of Alta Road and described as a prehistoric lithic resource area containing large bulky tools (push-planes, scrapers, choppers, hammerstones, domed scrapers, cores), most of which were made of local green felsite and were moderately to heavily patinated. No midden soils were observed. Site disturbances, due to plowing/cultivation, were noted on the site record (Taton 1979). The site was documented again in August 1979 by J. Corum, at which time the recorder observed numerous core tools, scrapers, one blade, and an abundance of flake debitage. Corum's update appears to have expanded the site boundary across to the west side of Alta Road (Corum 1979). Very little additional information was provided. Since its initial recordation in 1979, site CA-SDI-7215 has undergone testing and monitoring as a part of several different cultural resources investigations (PPEC 2011l, p. 4), as detailed below.

The site was revisited and tested by Smith and Moriarty (1985) for the proposed International Raceway project. The site area was described as containing large quantities of felsite tools, flakes, and cores dispersed over a large area, and it was postulated to be a large lithic tool manufacturing area (Smith and Moriarty 1985, p. 26). It is the northern portion of the International Raceway project area that lies adjacent to the current Pio Pico project area in which CA-SDI-7215 is located. At least four other sites were clustered around this area, as well, and the investigators referred to these sites as having great research potential (Smith and Moriarty 1985, p. 49). The subsurface testing conducted by Smith and Moriarty at site CA-SDI-7215 was restricted to a narrow strip of land, within the International Raceway project area, which comprised only the southern periphery of the site. This small area in which the testing was conducted was recommended by the researchers as having no data potential; therefore, no further studies were recommended at that portion of the site. The researchers did conduct a walkover of the entire site, which included the collection of selected surface artifacts that were subsequently curated (Smith and Moriarty 1985, p. 27). With the exception of the narrow strip of land that was tested in the southern portion of the site, the remainder of the site remained uninvestigated and unevaluated at that time.

The site was again revisited and tested as a part of the Alta Road Widening Project in 1987, at which time two 1x1-meter test units were excavated along the western edge of the site boundary adjacent to Alta Road (Hector 1987). The area in which the testing occurred was also identified as having no potential to yield important data, and no further investigation was recommended at that location. The remaining portion of CA-SDI-7215 was recommended as needing further investigation in order to determine the site's data potential.

In 2000, the site was investigated again for the Otay Mesa Generating Company (OMGC) project (Gallegos and Associates 2000). The researchers noted that the site

had been disturbed by agricultural activities. The purpose of the investigation was to determine site size, depth, content, integrity, and its potential to address important research questions in order to determine site significance. The testing effort included the collection of surface artifacts, excavation of 34 shovel test probes, excavation of four 1x1-meter test units throughout the site area (Gallegos and Associates 2000, p. 4-1). The researchers reported that the overall density of artifacts was low, but that the northwest portion of the site contained a higher density of surface and subsurface artifacts (Gallegos and Associates 2000, p. 16-8). Only lithic materials were recovered during excavation, and the site was interpreted to be a temporary lithic reduction area. The researchers reported that the diversity of tool types (and the activities with which they may be associated) was low, and the information gained through the lithic analyses was limited (Gallegos and Associates 2000, p. 16-8). Based on this information, the researchers concluded that site, CA-SDI-7215, had no potential to yield important data. In 2001, the Energy Commission's Final Decision for the OMGC project Application for Certification determined that CA-SDI-7215 did not qualify as a significant cultural resource, but required that monitoring occur during construction to limit impacts to any potentially significant finds.

In September 2001, a previously unknown archaeological deposit of CA-SDI-7215 was discovered during construction monitoring of the OMGC project. The deposit, which was located adjacent to and east of the known site boundary of CA-SDI-7215, was named Locus B (the previously recorded portion of the site was labeled as Locus A). Locus B was determined to contain valuable data, and a data recovery program was implemented. In July 2002, Gallegos and Associates submitted a report documenting the results of both the construction monitoring and data recovery work (Gallegos and Associates 2002). The monitoring and data recovery efforts at both Locus A and Locus B of site CA-SDI-7215 produced an assemblage of artifacts that included numerous unifacial tools, battered implements, flaked stone tools, cores, manos, metates, groundstone fragments, debitage, tested raw materials, an anvil, a polished stone, and one shell fragment. Based on the assemblage of artifacts and materials, the researchers concluded that the site had neither been used for lithic resource procurement nor for flaked stone tool manufacture, as had been previously suggested; rather, it was proposed that prehistoric inhabitants used this specific location during the middle Holocene to procure and process wood for artifacts and to collect and process vegetal materials that required the use of manos and metates (Gallegos and Associates 2002, p. 5-20). Mitigation of the OMGC project's impacts to the eastern portion (i.e., Locus B) of site CA-SDI-7215 was considered to have been achieved through this data recovery effort.

Gallegos and Associates revisited site CA-SDI-7215 as part of an investigation for the Lonestar Parcel for Otay Mesa Properties, L.P. (Gallegos and Associates 2003). The western portion of the site was tested to determine if any buried deposits were present. A surface survey was conducted, and six Shovel Test Probes (STPs) were excavated, all of which produced negative results. Due to the lack of surface and subsurface archaeological materials, this portion of site CA-SDI-7215 was recommended as having no potential to yield important data, and no further investigation was advised (Gallegos and Associates 2003, p. 7-4).

Gallegos and Associates once again investigated site CA-SDI-7215 in 2006 for the Corrections Corporation of America project area (Gallegos and Associates 2006). The investigation consisted of the mapping and collection of surface artifacts in the site area and the excavation of 18 STPs on the west side of Alta Road to determine site significance. All 18 STPs produced negative results, and only two pieces of debitage were recovered from the site surface. On the basis of the testing program, the portion of the site located on the west side of Alta Road was recommended as having no potential to yield important data that would qualify it as a significant cultural resource for the purposes of CEQA and San Diego County's resource protection ordinance (Gallegos and Associates 2006, p. 4-1 – 4-4).

In 2007, the southern portion of CA-SDI-7215 (Locus A) was monitored by Gallegos and Associates during construction of the Border Patrol Station project. No cultural materials were observed during the construction monitoring effort (Gallegos and Associates 2007, p. 3-1).

CA-SDI-10067 Prehistoric Archaeological Site

This resource lies within a portion of the Modified Gas Line Route A portion of the PPEC project area. Based on the records and literature research, site CA-SDI-10067 was first documented by Huey, et al. in 1991a. The site was described as a sparse lithic scatter containing Santiago Peak Metavolcanic materials adjacent to the east side of a dirt road, which is the now-paved Enrico Fermi Road.

Site CA-SDI-10067 was revisited and updated by Gallegos and Associates in 1992. The investigators conducted test excavations in an effort to determine site significance. Several STPs were excavated within and around the recorded site boundary (please note that the map provided by Gallegos and Associates indicates that testing occurred on the west side of the road only, yet the site information indicates it was located on the east side). With the exception of one metavolcanic flake, no prehistoric materials were recovered. Recent historic debris (glass, plastic, nails, and metal fragments) was recovered to a depth of 30 centimeters, evidencing prior site disturbance (Gallegos and Associates 1992, pp. 2-3). The testing effort did not identify a subsurface deposit at site CA-SDI-10067, and it was recommended that the site does not qualify as a significant cultural resource under CEQA and County of San Diego Guidelines. No further investigation was advised at the site.

CA-SDI-10297/H Prehistoric Archaeological Site with Historic-era Component

This resource is located within a portion of the Transmission Line Alternative Route B for the PPEC project. The literature and records research at the SCIC indicates that site CA-SDI-10297/H was first documented by Brian Smith in 1984. The site was described as a very large artifact scatter (nearly 30 acres) containing several varieties of scrapers, cores, planes, and hammerstones, as well as a few manos and metates, a blade, a knife, and a discoidal (Smith 1984). The site record also notes the presence of a below-ground cistern on site; however, no other information was provided. Smith and Moriarty (1985) conducted test excavations at site CA-SDI-10297/H as part of an investigation for a proposed motor racing park. The evaluation of the site included controlled surface collection of artifacts and the excavation of two test units in the extreme southern

portion of the site. The surface collection resulted in the discovery of very few artifacts, and the test excavation units yielded only one flake. The researchers concluded that the portion of site CA-SDI-10297/H that lies within the motor racing park project area represents a peripheral edge of the site and, therefore, did not have the potential to yield important data; however, the researchers also noted that their evaluation did not apply to the remainder of CA-SDI-10297/H, which they indicated may contain significant cultural deposits (Smith and Moriarty 1985, p. 16).

Site CA-SDI-10297/H was again revisited and tested for the OMGC project (Gallegos and Associates 2000). Gallegos and Associates (2000, p. 1-7) modified (reduced) the original site boundary for CA-SDI-10297/H based on their investigation and identified the southeast corner of the OMGC project area as containing the highest concentration of materials. The test excavation involved the collection of surface artifacts and the excavation of 38 STPs and two 1x1 meter control units. The results of the test excavation yielded battered implements, steep-edged unifacial tools, flake tools, a hammerstone, cores, metate fragments, manos, debitage, faunal bone, and shell fragments, as well as fragments of historic-era artifacts, such as ceramic and glass (Gallegos and Associates 2000, p. 7-14). Given the site's integrity, as well as the high density and variation in artifact types, site CA-SDI-10297 was recommended as having the potential to yield important data (Gallegos and Associates 2000, p. 17-10). In 2001, the Energy Commission's Final Decision for the OMGC project determined that CA-SDI-10297/H was eligible for the CRHR, and therefore, is considered a significant cultural resource under CEQA. Due to this finding, the portion of the site that occurred within the OMGC project area was avoided during the project's construction activities; therefore, no data recovery excavations occurred.

Site CA-SDI-10297/H was, once again, revisited and investigated between 2000 and 2005 as part of the Otay Hills Quarry (OHQ) Project (Brian Smith and Associates 2005). The investigation, consisting of an intense surface inspection of the site area (during which all surface artifacts were mapped and collected) and subsurface testing, which involved the excavation of 15 STPs and one 1x1-meter test unit, was conducted. A total of 95 artifacts was collected from the surface, and 504 artifacts, as well as fire affected rock and a small amount of marine shell, were recovered from the subsurface excavations. Artifact types included groundstone tools, core tools, percussion and precision tools, and lithic debitage (Brian Smith and Associates 2005, p. 6.4-2). During the surface inspection, an isolated historic feature, a circular cistern constructed of brick and mortar, was identified and mapped. The prehistoric component of site CA-SDI-10297/H was interpreted by the researchers to be a temporary camp where activities included food resource extraction and processing, as well as lithic tool manufacture and maintenance. The researchers indicated that the prehistoric component of the site possessed additional research potential and was recommended as historically significant for the purposes of CEQA. The historic component of the site was not recommended to be significant due to the fact that it was an isolated find with no associated artifacts or refuse deposits. The site was located outside the area in which the proposed direct quarry activities would occur; however, the researchers indicated that the site could be *indirectly* affected by the quarry operation. Therefore, it was recommended that site CA-SDI-10297/H be placed within an easement designated for Open Space. It was specifically indicated that the Open Space designation must include

language that will prohibit any type of surface modification to the site or intrusion into the site by grading, trenching, or other development-related improvements (Brian Smith and Associates 2005, p. 9.0-2). As part of the research for this siting case, staff learned that a San Diego County open space archaeological conservation easement, containing a portion of site CA-SDI-10297 and immediately contiguous with both the OMGC project and the PPEC project, has in fact, been established with heavy restrictions against any development and disturbance to the site area.

In 2006, Gallegos and Associates designed and implemented a cultural resources monitoring program for the construction of the Border Patrol Station (BPS) project, which was located adjacent to the south edge of the recorded site boundary for CA-SDI-10297/H (Gallegos and Associates 2007). According to the monitoring report, the purpose of the monitoring program was to ensure that cultural deposits, if encountered, would be evaluated in a timely and appropriate manner. As a result of the construction monitoring effort, numerous artifacts were recovered from the northeast portion of the project area, indicating that the site did, in fact, extend into the northern portion of the BPS project. It appears that the researchers initially assumed that the site was located outside (north of) the BPS project area; therefore, no controlled site testing occurred within the project area prior to construction. Instead, the cultural materials were identified, evaluated, and analyzed upon being encountered during construction activities. Cultural materials recovered during the construction monitoring effort included manos, ground stone fragments, metates, battered implements, biface fragments and bifacial tools, debitage, a ceramic sherd, and marine shell remains. In addition, a small amount of historic era remains included glass fragments, ceramic fragments, and an unidentified metal object (Gallegos and Associates 2007, p. 5-19). In an effort to address pertinent research questions, a number of analyses were conducted including lithic analysis, groundstone tool analysis, ceramics studies, faunal analysis, protein residue analysis, and radiocarbon dating analysis. Based on radiocarbon results and other analyses, the site was concluded to be an Early Period/Archaic occupation (5480 – 5060 BP) whereby woodworking and plant processing activities occurred, as well as the manufacture and maintenance of bifacial tools and milling implements using both local and non-local materials. Although not explicitly stated in the report, it appears that site CA-SDI-10297 was considered historically significant once it was exposed and evaluated during construction and was mitigated *within the project limits* through the various analyses completed as part of the monitoring program. The report points out that the area north/northeast of the BPS project is a significant site area protected by a San Diego County Open Space Conservation Easement (Gallegos and Associates 2007, p. 4-41).

CA-SDI-10298 Prehistoric Archaeological Site

This resource is located within portions of the PPEC Transmission Line Alternative Routes A and B. According to the literature and records research, site CA-SDI-10298 was first documented and mapped by Brian Smith in 1984. At that time, the site was described as a light to dense scatter of surface artifacts on a gently sloping terrace overlooking a seasonal drainage. Artifacts observed included various types of scrapers, cores, planes, utilized flakes, debitage, and a metate (Smith 1984).

In 2000, portions of the site underwent testing as a part of the OMGC project (Gallegos and Associates 2000). The site testing effort included the collection of all surface artifacts, the excavation of six STPs, and laboratory analyses in order to determine site size, depth, content, integrity, and potential to address important research questions (Gallegos and Associates 2000, p. 8-1). A total of 10 artifacts were collected from the surface (two steep-edged unifacial tools and eight debitage). The six STPs yielded no additional cultural materials or deposits. Given the limited number of surface artifacts recovered and the apparent absence of subsurface deposits, as evidenced by the six STPs, the tested portion of the site was interpreted to be a sparse lithic scatter and was recommended as not having the potential to yield important data (Gallegos and Associates 2000, p. 17-10). No additional treatment of the site in that area was advised. In 2001, the Energy Commission Final Decision for the OMGC project Application for Certification determined that the tested portion of site CA-SDI-10298 was not a significant cultural resource under CEQA.

Site CA-SDI-10298 was revisited and tested between 2000 and 2005 as part of the Otay Hills Quarry (OHQ) Project (Brian Smith and Associates 2005). The investigators note that the majority of the area had been heavily disturbed by previous agricultural activities, recent grading, the construction of a large underground aqueduct that runs through a portion of the site, and a modern fence that runs across the site along the west edge of the OHQ project property. The portion of the site that was tested for the OHQ project appears to be located just east of the area of analysis for the PPEC Transmission Line Route A. The OHQ testing effort involved the mapping and collection of all surface artifacts, excavation of seven STPs, and excavation of one 1x1 meter test unit. The field investigation yielded 186 artifacts and fire affected rock, as well as a small amount of faunal bone and marine shell. Lithic production waste (flakes and debitage) accounted for the majority of artifacts. In addition, percussion and precision tools were also recovered. The materials from which the lithic artifacts were derived all appear to have been locally obtained. The researchers concluded that the analysis of the prehistoric cultural material recovered from CA-SDI-10298 revealed a significant cultural deposit extending to a depth of 40 centimeters (Brian Smith and Associates 2005, p. 6.5-3). The recovered materials, including lithic artifacts and marine mollusk shell, indicate that site activities were focused on floral and faunal food procurement and processing, as well as lithic tool manufacture and maintenance. Subsistence at the site appears to have been based on both botanical and faunal resources. The researchers indicated that the site exhibits the potential for subsurface deposits and/or buried cultural features and, therefore, has additional research potential (Brian Smith and Associates 2005, p. 6.5-3). As site CA-SDI-10298 would be directly affected by the quarry project construction, the researchers recommended data recovery as mitigation for impacts to the site. The SCIC did not have record of a data recovery report; therefore, it is unclear whether the recommended data recovery excavations actually occurred for this site.

CA-SDI-12337 Prehistoric Archaeological Site

This resource is located in a portion of the PPEC project's Natural Gas Line Route B for the PPEC project. According to the records and literature review from SCIC, site CA-SDI-12337 is a very large extensive prehistoric archaeological site that is the result of

combining several other trinomials from previously recorded sites (CA-SDI-5352, -9974, -10072, -10735) to form one composite site possessing the current trinomial. The earliest site record for the current trinomial was prepared by Martin Rosen in 1989. Rosen indicates that the site appears to be a large prehistoric quarrying area, or an area where extensive processing of plant resources was occurring. The site surface was described as containing large quantities of debitage, core and flake tools, and cores made from local materials, as well as smaller quantities of groundstone and shellfish remains. Rosen also indicates that subsurface components have been identified within some portions of the site. Disturbances noted primarily include sustained agricultural activities, but buildings, reservoirs, fences, roads, and landscaping have also occurred in some portions of the site area. Rosen remarked that the limits of the site are difficult to define due to the sheer intensity of prehistoric use in the area (Rosen 1989).

Prior to being combined into site CA-SDI-12337, site CA-SDI-5352 was tested by Gallegos and Associates between 1989 and 1990. Based on surveys and extensive testing, the researchers concluded that the site represents an Early Period occupation in which prehistoric inhabitants were exploiting the naturally occurring metavolcanic cobbles for toolstone manufacture. Analysis of the flaked stone materials indicates that the area was used as a lithic procurement and lithic reduction area. Due to the lack of intact subsurface deposits, the researchers concluded that the site was not significant under the County's Resource Protection Ordinance (Gallegos and Associates 1992, p. 5-5).

A testing program was conducted at site CA-SDI-12337 in 1993 as part of the California Department of Transportation's (Caltrans') State Route 125 project (PPEC 2011l, p. 13). The test excavations were implemented at three areas within the site boundary; two located in the northern site area, and one in the southern site area where the PPEC project's Gas Line Route B is located. The test excavations in the southern portion of CA-SDI-12337 resulted in the discovery of 233 prehistoric artifacts (166 from surface collections and 59 from subsurface excavations) and four fragments of marine shell. In addition, 13 historic-era/modern artifacts were recovered. Artifact types included lithic debitage, cores, utilized flakes, unifacial tools, and percussion tools. Within the Gas Line Route B area of analysis, a total of 16 artifacts were recovered from both the surface and subsurface (PPEC 2011l, p. 14). Based on the 1993 test excavations, the site was recommended as not having the potential to yield important data, and no further treatment was advised.

The site has subsequently been revisited by various investigators who have prepared updates to the site record (Gross 1993, Gallegos and Associates 1995, Robbins-Wade 2002, 2006, 2007, and Blotner 2010). Gross (1993) inspected the area southeast of the intersection of Otay Mesa Road and Harvest Road, at which time no surface artifacts were identified. Disturbances due to agriculture and road construction were also noted. The other updates to the site record pertained to areas of the site well outside of the PPEC area of analysis.

CA-SDI-12872 Prehistoric Archaeological Site

This resource is located along a portion of the PPEC project's Natural Gas Line Route B. According to the SCIC records and literature research, site CA-SDI-12872 was first documented in 1991 (Huey et al. 1991a). The site was described as a large habitation site containing numerous flake tools, core tools, cores, manos, metates, debitage, and one biface (which was collected at the time). The overall site integrity was described as good, but disturbance by cultivation was noted. The site is located just east of site CA-SDI-12337 and may be associated with the large lithic scatter site.

As part of the cultural resources investigation for the OMGC project, site CA-SDI-12872 was revisited and tested in the portion of the site adjacent to Otay Mesa Road (which includes a portion of the PPEC project area) to determine the site's integrity and potential to address important research questions (Gallegos and Associates 2000). The testing program involved the collection of surface artifacts and the excavation of five STPs to an average depth of 40 centimeters. The surface collection resulted in the recovery of three pieces of debitage, and the STPs yielded negative results (Gallegos and Associates 2000, p. 9-1). Due to the presence of few artifacts and the lack of subsurface cultural deposits or features, the researchers concluded that the portion of site CA-SDI-12872 that was tested is not a contributing element to the significance of the overall site (Gallegos and Associates 2000, p. 17-12).

In 2010, the southern margin of site CA-SDI-12872 was resurveyed, and a site record update was prepared (Blotner 2010). The site record update indicates that no artifacts, ecofacts, features, or midden soils were identified within or outside the southern margin of the recorded site boundary, which corresponds with the current PPEC project area.

CA-SDI-12879 Prehistoric Archaeological Site

This resource is located along a portion of the PPEC project's Modified Natural Gas Line Route A. Based on the records and literature research from SCIC, site CA-SDI-12879 appears to have been first documented in 1991 (Huey, et al. 1991b). The site was described as a sparse lithic scatter containing Santiago Peak Metavolcanic artifacts (one flake, two potentially retouched flakes, and two angular waste fragments). The SCIC records and literature research produced no site record updates or reports associated with this site.

CA-SDI-12881 Prehistoric Archaeological Site

This resource is located along a portion of the Natural Gas Line Route A area of the PPEC project. Based on the records and literature research from SCIC, site CA-SDI-12879 appears to have been first documented in 1991 (Huey et al. 1991c). The site was described as sparse lithic scatter containing one hammerstone, three flakes, one scraper plane, and one possible hammerstone. The site is located in an open previously plowed field.

Site CA-SDI-12881 was tested for potential subsurface deposits in 1992 at which time a number of STPs were excavated in and around the site area (Gallegos and Associates

1992). No artifacts or subsurface cultural deposits were recovered as a result of the testing. The researchers concluded that the site was not historically significant under CEQA or County Guidelines and recommended that no additional work was necessary for this site.

Archival and Library Research

Detailed resource-specific information needed by staff to prepare their environmental analyses may entail primary and secondary research in various archives and libraries, possessing such sources as historic aerial photography, historic maps, city directories, and assessors' records. The applicant may include archival information as part of the information provided to staff in the AFC or may undertake such research to respond to staff's Data Requests. Staff may also undertake such research to supplement information provided by the applicant.

Archival and Library Research Results

Site-specific and general primary and secondary research was conducted by the applicant at the San Diego History Center; the San Diego State University Library; University of California, San Diego Geisel Library and Mandeville Special Collections; the San Diego Public Library; and numerous online resources, including *Calisphere – A World of Digital Resources* and *California Historic Topographic Map Collection* (PPEC 2011d, p. 7-4). As a part of this research, the applicant reviewed historic maps, photographs, newspaper articles, general histories, and journal articles (PPEC 2011d, p. 7-4). According to the applicant, this research contributed to the historic contexts and themes of the area, as well as to specific information concerning the properties within the project area (e.g., date of construction, architect/builder, and historic land ownership).

Local Agency and Organization Consultation

California counties and cities may recognize particular cultural resources as locally historically important by ordinance, in general plans, or by maintaining specific lists. The Energy Commission's Siting Regulations require applicants to acquire information on locally recognized cultural resources specific to the vicinity of their project by consulting local planning agencies and local historical and archaeological societies.

Results of Inquiries to Local Agencies and Organizations

On November 18, 2010, the applicant contacted, via email, Ms. Gail Wright of the County of San Diego Department of Planning and Land Use, Ms. Jane Kenealy of the San Diego History Center, Ms. Donna Golden of the Chula Vista Heritage Museum, and Mr. Bruce Coons, Executive Director of the "Save Our Heritage Organisation" (SOHO) as part of the effort to identify any important cultural resources within a one-mile radius of the project site and laydown area, and a one-quarter-mile radius on either side of the transmission and natural gas corridors (PPEC 2011d, p. 7-3 and Exhibit D).

The applicant received an email response from Ms. Gail Wright of San Diego County on November 18, 2010, indicating that there are known sites on the PPEC property and that an evaluation of archaeological work, by a county approved archaeologist, would

need to be conducted as part of any County discretionary permit process. No specific resources were, however, identified in Ms. Wright's response. Ms. Donna Golden of the Chula Vista Heritage Museum replied to the applicant's inquiry about the presence of cultural resources in the PPEC project area on November 19, 2010. Ms. Golden indicated that they do not possess any records of resources for the PPEC project area since it is outside the City of Chula Vista. The applicant received a Delivery Failure report in response to the email inquiry sent to Mr. Bruce Coons. No response was received from Ms. Jane Kenealy of the San Diego History Center regarding the applicant's email inquiry about potential cultural resources in the PPEC project area.

As a result of a change in the location of the proposed Gas Line Route A (now referred to as "Modified Gas Line Route A"), the applicant once again contacted Ms. Gail Wright of the County of San Diego Department of Planning and Land Use; Ms. Jane Kenealy of the San Diego History Center; Mr. Jim Royle of the San Diego County Archaeological Society; Mr. Bruce Coons of Save Our Heritage Organisation; and Ms. Donna Golden of the Chula Vista Heritage Museum on May 13, 2011 and May 19, 2011 (PPEC 2011h, p. 5 and Attachment C). The applicant received one response, on June 2, 2011, from Ms. Golden indicating that she was unaware of any cultural resources near the Modified Gas Line Route A. To date, the applicant has received no other responses from the local agencies and organizations contacted regarding the initial AFC or modification to the PPEC project.

Native American Consultation

The Native American Heritage Commission (NAHC) maintains two databases to assist cultural resources professionals in identifying cultural resources of concern to California Native Americans, referred to by staff as Native American cultural resources. The first database, the Sacred Lands File (SLF), contains records for places and objects that Native Americans have identified as sacred or otherwise important, such as cemeteries or gathering places for traditional foods and materials. The second database contains a current list of the names and contact information for individuals, representing a tribal group or themselves, who have expressed an interest in being contacted about development projects in specified areas. Both the applicant and Energy Commission staff request information from the NAHC regarding the presence of Native American cultural resources in the vicinity of a proposed project, as well as a list of Native American representatives to whom inquiries may be made to identify any additional cultural resources and/or any concerns the Native Americans may have about a proposed project. The following describes the results of these efforts.

Results of Inquiries Made to Native Americans

The applicant contacted the NAHC by letter/fax on November 16, 2010 requesting both a search of the Sacred Lands File for the PPEC project area and a list of local Native American representatives or individuals to contact regarding the proposed project (PPEC 2011d, p. 2-1).

The NAHC responded to the applicant's request by letter/fax on November 23, 2010 indicating that the Sacred Lands File search had failed to identify the presence of Native American cultural resources in the immediate project area (PPEC 2011d, p. 2-1 and

Exhibit B). The NAHC also provided a list of 19 local Native American representatives whom the applicant could contact to seek input regarding the project, including the following individuals: (1) Mr. Edwin Romero, Chairperson of the Barona Group of the Capitan Grande; (2) Ms. Gwendolyn Parada, Chairperson of the La Posta Band of Mission Indians; (3) Mr. Allen Lawson, Chairperson of the San Pasqual Band of Mission Indians; (4) Mr. Virgil Perez, Spokesman for the Ilpay Nation of Santa Ysabel; (5) Mr. Danny Tucker, Chairperson of the Sycuan Band of the Kumeyaay Nation; (6) Mr. Bobby Barrett, Chairperson of the Viejas Band of Kumeyaay Indians; (7) Mr. Ron Christman of the Kumeyaay Cultural Historic Committee; (8) Ms. Monique LaChappa, Chairperson of the Campo Kumeyaay Nation; (9) Mr. Kenneth Meza, Chairperson of the Jamul Indian Village; (10) Mr. Mark Romero, Chairperson of the Mesa Grande Band of Mission Indians; (11) Mr. Paul Cuero of the Kumeyaay Cultural Heritage Preservation; (12) Ms. Carmen Lucas of the Kwaaymii Laguna Band of Mission Indians; (13) Ms. Rebecca Osuna, Spokesperson of the Inaja Band of Mission Indians; (14) Mr. Will Micklin, Executive Director for the Ewiiaapaayp Tribal Office; (15) Mr. Michael Garcia, Vice Chairperson of the Ewiiaapaayp Tribal Office; (16) Mr. Clint Linton, Director of Cultural Resources for the Ipai Nation of Santa Ysabel; (17) Mr. Leroy Elliott, Chairperson of the Manzanita Band of the Kumeyaay Nation; (18) Mr. Louis Guassac, Executive Director of the Kumeyaay Diegueno Land Conservancy; and (19) Mr. Frank Brown of the Viejas Kumeyay (PPEC 2011d, Exhibit B).

On December 2, 2010 and December 3, 2010, the applicant sent letters to each of the Native American representatives listed above notifying them of the proposed PPEC project and requesting input from them regarding cultural resources or sacred sites in the project area. On December 9, 2010, the applicant placed follow-up phone calls to all Native American representatives to whom letters were sent the previous week (PPEC 2011d, Exhibit B). The results of these phone calls were documented by the applicant in a correspondence log, which is included in the Data Adequacy Supplement (PPEC 2001d, Exhibit B). In most cases, the applicant did not speak directly with the Native American representative, but left a voicemail or a message with an assistant. To date, the applicant has received a response from two individuals, Ms. Carmen Lucas of the Kwaaymii Laguna Band of Mission Indians, and Mr. Clint Linton of the Ipai Nation of Santa Ysabel. Both recommended that Native American monitors be present for surveys and ground-disturbing activities related to the project; however, no specific information was provided regarding the presence or location of sacred sites or Native American cultural resources. The remaining individuals who were contacted either had no comments or have not yet responded to the applicant's letters or voice messages. Staff contacted Ms. Lucas on February 9, 2012, and confirmed that she is still requesting the presence of a Native American monitor for all surveys and ground-disturbing activities (TN 63650). Attempts to contact Mr. Linton have been unsuccessful. Further discussions with Native American tribal representatives are needed to determine what portion of the project area, including pipeline routes and transmission line corridors, will require a Native American monitor.

As a result of a change in the location of the proposed Gas Line Route A (now referred to as "Modified Gas Line Route A"), the applicant requested another search of the Sacred Lands File from the NAHC on May 4, 2011, for the area along Enrico Fermi Drive where Modified Gas Line Route A is now proposed (PPEC 2011h, p. 3 and

Attachment D). The NAHC responded on May 11, 2011, indicating that the SLF did not identify the presence of Native American cultural resources in the area within and immediately adjacent to Modified Gas Line Route A. The NAHC provided a list of 20 Native American representatives who could be contacted regarding the PPEC project. This list included all individuals who were previously contacted by the applicant, with the exception of Mr. Bobby Barrett, who was replaced by Mr. Anthony Pico as Chairperson of the Viejas Band of the Kumeyaay. In addition, one new contact was included on the NAHC's list, Bernice Paipa, Vice Spokesperson for the Kumeyaay Cultural Repatriation Committee. The applicant sent letters to each of the individuals listed on the NAHC's contact list on May 19, 2011 (PPEC 2011h, Attachment D). To date, the applicant has received no written responses from the local Native American community regarding the project.

Energy Commission cultural resources staff also contacted the NAHC regarding the PPEC project on August 1, 2011. Staff requested a search of the SLF, as well as a list of local Native American representatives who may be consulted regarding the project. The NAHC responded to staff's request on August 2, 2011, indicating that the Sacred Lands File search had failed to identify the presence of Native American cultural resources within the PPEC project area. A list of 21 Native American representatives was provided by the NAHC. This list included all the individuals that were contacted by the applicant (as listed above), with the exception of Bobby Barrett, who had been replaced by Anthony Pico as Chairperson of the Viejas Band of Kumeyaay Indians. In addition, two new contacts were included on the NAHC's list, including Steve Banegas, Spokesperson for the Kumeyaay Cultural Repatriation Committee and Bernice Paipa, Vice Spokesperson for the Kumeyaay Cultural Repatriation Committee.

On August 4, 2011, Energy Commission cultural resources staff sent letters via certified mail to all 21 Native American representatives on the list provided by the NAHC informing them about the project and requesting any knowledge of or concerns they may have for Native American cultural resources that may be affected by the project. The letter also provided contact information for the Energy Commission's Public Adviser's Office for assistance participating in the Energy Commission's review process. Staff received return receipts for all letters except those addressed to Mr. Frank Brown and Mr. Ron Christman of the Viejas Kumeyaay Indian Reservation, whose letters were unclaimed and, therefore, returned by the postal service. On August 19, 2011 and August 22, 2011, staff placed phone calls to the Native American representatives as a follow-up to the letters. In all cases, staff was able to leave a phone message, but did not achieve an opportunity to directly discuss the project with any of the individuals or obtain input from them regarding the project. To date, staff has received no response from the local Native American representatives regarding the Energy Commission's requests for input.

FIELD INVENTORY INVESTIGATIONS

The Energy Commission's Siting Regulations require applicants to conduct surveys to identify previously unrecorded cultural resources or relocate previously recorded cultural resources in or near the proposed project areas. These surveys include a pedestrian archaeological survey and a built-environment survey. The applicant includes the

acquired new survey information as part of the information provided to staff in the AFC and may undertake additional field research, including geoarchaeological studies and site testing, to respond to Energy Commission cultural resources staff's Data Requests. Energy Commission cultural resources staff may also undertake additional field or literature research to supplement information provided by the applicant.

Results of Pedestrian Archaeological Survey

On December 1, 2010, the applicant conducted a pedestrian survey of the project site, laydown area, transmission line alternatives, and the underground portion of the gas line corridor, as well as a 200-foot buffer around the project site and laydown areas and a 50-foot buffer on either side of the linear facilities (PPEC 2011a, p. 7-1, p. 7-3). The pedestrian survey consisted of a systematic inspection of the ground surface in transects spaced no greater than 15 meters apart. Overall visibility at the time of the survey was poor (5 to 10%) over the majority (80%) of the survey area due to low-growing vegetation (PPEC 2011a, p.7-3). The applicant noted evidence of disturbances both within and surrounding the project area of analysis, including grading; paving; road and building construction; upturned and redeposited boulders and cobbles; and rodent burrowing activity (PPEC 2011a, p. 7-3).

Due to poor visibility and private property access restrictions during the December 1 survey, the applicant conducted a subsequent pedestrian survey of the project site, laydown area, transmission line alternatives, gas line alternatives, and buffer areas on June 21, 2011, at which time, ground surface visibility had greatly improved to over 50 percent (PPEC 2011l, p. 2).

Although archaeological resources have been previously recorded in the project area, the applicant identified no new historic or prehistoric cultural resources during the pedestrian surveys conducted in December 2010 and June 2011 in the project area of analysis, which includes the project site, laydown area, transmission line corridors, gas pipeline corridors, and buffer areas (PPEC 2011a, p. 7-4 and PPEC 2011l, p. 3). Specific information pertaining to the conditions observed at each known site location is described below.

Site CA-SDI-7215 Prehistoric Archaeological Site

This resource has been previously documented as encompassing a large area that includes the plant site, laydown area, and portions of Transmission Line Routes A and B, and Gas Line Route A. As described in detail above in the Background Inventory Research section of this report, site CA-SDI-7215 had been previously surveyed, tested, excavated for data recovery, and monitored both within and beyond the PPEC project limits as part of seven different prior cultural resources investigations. These prior investigations included documentation of the site's constituents, as well as the collection and curation of both surface and subsurface artifacts. This previous work found much of the site to be a broad but shallow distribution of cultural materials, most of which were tested and determined to have no potential to yield important data. One portion of the site was found to possess significant cultural deposits during construction of the OMGC project, and data recovery excavations were conducted to mitigate impacts, prior to the site's destruction.

In June 2011, the applicant examined the portions of the project area where site CA-SDI-7215 had been previously mapped. No evidence of the site was observed, and in fact, the applicant noted that the entire PPEC site and laydown areas had been excavated to a depth of 10 to 20 feet. The soil had been removed and/or redistributed, and the area had been graded and contoured (PPEC 2011l, pp. 6 and 7). The excavation and grading work had been conducted by the current landowner/developer in accordance with a 2009-2010 grading permit issued by San Diego County (*Grading Permit No. 2700-1555*) (PPEC 2011d, p. ES-1). The soil removal and grading of the property, which was planned prior to the inception of the PPEC project, occurred in May/June 2011, after submission of the AFC.

Energy Commission cultural resources staff also visited the project area and observed an extensive amount of disturbance within the site area in June 2011. Based on the previous cultural resources investigations at the site, as well as the high degree of excavation, grading, and soil disturbance that has occurred onsite as part of the grading permit, staff concurs with the applicant that site CA-SDI-7215 no longer exists within the limits of the PPEC project area.

CA-SDI-10067 Prehistoric Archaeological Site

This resource has been previously documented within a portion of the Modified Gas Line Route A of the PPEC project area. Both the applicant and Energy Commission cultural resources staff visited the site location in June 2011, and observed that there is now a truck storage lot owned by Rapid Transport Express (RTX) at the location of this site. The area has been graded, paved and/or landscaped. Staff concurs with the applicant that site CA-SDI-10067 no longer exists within the PPEC project area.

CA-SDI-10297/H Prehistoric Archaeological Site with Historic-era Component

This resource has been previously documented as occurring within a portion of the PPEC project's Transmission Line Alternative Route B. During the June 2011 field survey, the applicant observed no surface evidence of site CA-SDI-10297 within the proposed Route B Transmission Line corridor, with the exception of the area adjacent to the southeast corner of the existing OMGC Plant that has been designated as an Open Space Archaeological Conservation Easement (*Easement in Favor of the County of San Diego for Archaeological Conservation, recorded September 13, 2001 as File No. 2001-0657833, O.R.*). The applicant did not survey the portion of Transmission Line Route B that falls within the Open Space easement area due to restrictive fencing around the perimeter of the easement area. The terms of the easement prohibit development or disturbance within the easement area, which contains the significant portion of site CA-SDI-10297/H. Due to the prior cultural resources investigations of the site, the degree of prior disturbances and development, and the lack of cultural materials observed outside the limits of the Open Space archaeological easement area, Energy Commission cultural resources staff concurs with the applicant that evidence of the site does not exist outside the limits of the designated Open Space easement area.

CA-SDI-10298 Prehistoric Archaeological Site

This resource has been documented as occurring within a portion of the PPEC project's Transmission Line Alternative Route A corridor, as well as potentially within a small portion of Transmission Line Alternative Route B corridor. As discussed above in the Background Inventory Research section above, site CA-SDI-10298 was tested for potential significance in two different areas on two separate occasions. One area of the site was determined not to be significant, while the other area, which appears to be located beyond (east of) the PPEC project limits, was found to possess research value.

During the June 2011, field survey for the PPEC project, the applicant observed no surface evidence of site CA-SDI-10298 within the Transmission Line Route A or B areas. The applicant noted a number of disturbances in the site area including roadway construction (Calzada de la Fuente Road), the OMGC Plant, dirt access roads throughout the area, two transmission lines, and areas previously graded for past construction projects. Energy Commission cultural resources staff also visited the site area at this location in June 2011, and staff concurs with the applicant that the area has been disturbed, and surface evidence of the site no longer exists within the PPEC project area of analysis.

CA-SDI-12337 Prehistoric Archaeological Site

This resource has been previously documented and mapped as occurring within a portion of Natural Gas Line Route B for the PPEC project. As described in the Background Inventory Research section above, site CA-SDI-12337 has been previously tested in the vicinity of the proposed PPEC Gas Line Route B area and was determined to lack the potential to yield important data.

In June 2011, the applicant surveyed the portion of the project limits in which the site was purported to be located and found no surface evidence of cultural materials. Given the previous investigations of the site, the degree of prior disturbances, and the lack of cultural materials visible on the surface, Energy Commission cultural resources staff concurs with the applicant that CA-SDI-12337 no longer exists within the PPEC project area of analysis.

CA-SDI-12872 Prehistoric Archaeological Site

This resource has been previously documented as occurring along a portion of the Natural Gas Line Route B of the PPEC project area of analysis. As discussed in the Background Inventory Research section above, this site was previously tested and yielded very little cultural material. As such, the site had been determined to lack the potential to yield important data.

In June 2011, the applicant surveyed the portion of the project area in which the site was purportedly located and found that the area had been disturbed by previous grading. The applicant found no evidence of cultural materials. Energy Commission cultural resources staff also visited the site area in June 2011, and concurs with the applicant that the area has, in fact, been disturbed, and no evidence of site CA-SDI-12872 exists within the PPEC project area of analysis.

CA-SDI-12879 Prehistoric Archaeological Site

This resource has been previously documented as occurring along a portion of the Modified Gas Line Route A area of the PPEC project. In June 2011, the applicant surveyed the portion of the project area in which site CA-SDI-12879 had been recorded and found no evidence of cultural materials. Energy Commission cultural resources staff also visited the site location in June 2011, and observed no evidence of the site in the reported site area, which is currently an open plowed field with full visibility. Given the lack of cultural materials, the apparent agricultural disturbances, and sparseness of materials reported in the original site record, staff concurs with the applicant that the site does not exist within the PPEC project limits.

CA-SDI-12881 Prehistoric Archaeological Site

This resource has been previously documented as occurring along a portion of the Modified Gas Line Route A area of the PPEC project. As discussed in the Background Inventory Research section above, site CA-SDI-12881 had been previously tested, at which time no artifacts or subsurface deposits were identified within or around the site area. As a result, the site was determined to have no potential to yield important data, and no further treatment was advised.

The applicant identified no evidence of the site during a survey of the project limits in June 2011. Energy Commission cultural resources staff also visited the site location in June 2011, and observed no evidence of the site within the project area of analysis. Agricultural disturbances were noted, as the purported site area lies within an open plowed field. Based on the current lack of cultural materials within the project area, the prior agricultural disturbances, and the findings and conclusions of the previous test excavations, staff concurs with the applicant that the site does not exist within the PPEC project limits.

Results of Geoarchaeological Investigations

As geomorphic processes have played a major role in the differential preservation of archaeological sites throughout California, the relationship between archaeological sites and their environmental context is an important factor in understanding and interpreting the archaeological record. At the request of Energy Commission staff, the applicant conducted a geoarchaeological analysis of the PPEC project area in June 2011 (PPEC 2011l, Response to Data Requests 33 and 34). The purpose of the geoarchaeological investigation was to identify those portions of the proposed PPEC project area that may have the potential to contain buried archaeological deposits with no surface manifestations.

The geoarchaeological study involved a review of existing geological, geo-morphological, soil science, and archaeological literature and data. The PPEC project area has been mapped as part of previous geological and soils studies, including Tan and Kennedy's (2002) Geological Map of the Otay Mesa 7.5' Quadrangle, as well as the Soil Survey of San Diego County (USDA 1973). The applicant also reviewed existing archaeological excavation reports from sites in the Otay Mesa area to corroborate the conclusions of the geological and soils data.

Given the location of the PPEC project (i.e., on one of the highest and oldest marine terraces in the San Diego area), the landform underlying the project area is expected to have been non-depositional (either stable or erosional) for the entire course of human occupation in the region, approximately 13,000 years (PPEC 2011l, Response to Data Requests 33 and 34, p. 3). No major drainages occur that could lead to major alluvial deposition across this portion of the Otay Mesa.

As part of the geoarchaeological analysis, the applicant drew from an in-depth geotechnical study conducted by Caltrans on the Otay Mesa directly south of the PPEC project area that included numerous continuous core samples and backhoe trenches (Caltrans 2010). The study concluded that one to two feet of soil was present throughout the area, formed directly on fine-grain sedimentary members of the Otay Formation (C horizon). These findings are consistent with the assumption that the mapped Diablo series soils are formed in-situ from fine grain sediments of the Otay Formation, and that no deposition has occurred during the late Pleistocene or Holocene that could potentially bury archaeological deposits (PPEC 2011l, Response to Data Requests 33 and 34, p. 3).

The applicant found that the archaeological record is also consistent with the geotechnical findings that the Otay Mesa has remained largely stable and/or erosional throughout the period of known human occupation (PPEC 2011l, Response to Data Requests 33 and 34, p. 3). Extensive archaeological investigations across Otay Mesa have consistently demonstrated a low potential for buried land surfaces and associated paleosols of appropriate age to contain buried archaeological resources. While subsurface artifacts have been identified during previous excavations, they are typically the same as those observed at the surface, exist in lower densities than at the surface, and are generally understood to be the result of down-mixing from the surface through modern mechanical, biological, and pedogenic processes. For instance, a number of previous studies at site CA-SDI-12337, which is a massive site covering more than one square mile approximately one mile west of the PPEC project area, have resulted in a consistent finding of very low-density, shallow subsurface artifactual material; no recorded subsurface features; and recommendations of ineligibility under both California and federal regulations. Site CA-SDI-7215 is another extensive lithic scatter located both within and adjacent to the PPEC project area, from which cultural materials were recovered from very near the surface to between 30 and 50 centimeters below surface. Given the results of all the existing geological mapping, soil mapping, and archaeological investigations, it is very unlikely that the archaeological deposits were buried through natural depositional processes; rather, it is much more likely that the deposits are the result of down-mixing through plowing, bioturbation, and pedogenic processes.

The conclusions of the applicant’s geoarchaeological investigation indicate that the PPEC project area is located on a very old, high-elevation portion of the Otay Mesa. Based on existing geologic mapping and soils mapping, this landform has been non-depositional (i.e., stable or erosional) for the entire course of human occupation in the region (latest Pleistocene and Holocene). As such, there is no potential for buried land surfaces and associated paleosols of appropriate age to contain buried archaeological

resources (PPEC 2011l, Response to Data Requests 33 and 34, p. 6). Based on the geoarchaeological analysis and the results of previous archaeological investigations in the Otay Mesa, Energy Commission cultural resources staff concurs with the applicant's conclusions that there is a low potential for deeply buried archaeological deposits with no surface manifestations within the PPEC project area.

Results of the Built-Environment Survey

The applicant conducted an intensive historic-era built-environment survey of the project area of analysis in December 2010, in an effort to identify any historical structures, buildings, or other architectural elements, which meet the criteria for consideration as a historical resource for the purposes of CEQA. The built-environment survey area included the project site, laydown area, and all linear facilities, as well as an additional half-mile radius beyond these project features. The survey did not include the underground portion of the gas line route, at which location only the parcels adjacent to the gas line were included in the survey. In the areas of the underground portion of the gas line, the built-environment survey did not consider properties set back from the edge/boundary of the parcel, and large rural properties were not identified beyond the area reasonably subject to effects from the project (PPEC 2011d, p. 7-3).

The applicant identified no historic-era built-environment properties within the limits of the project site, laydown area, or transmission line corridors. Energy Commission cultural resources staff confirmed that no such built-environment resources occur within these areas during the June 2011 project site visit. One previously recorded built-environment property was, however, identified along the natural gas line corridor (Historic Otay Mesa Road, P-37-031491). In addition, two newly identified properties (labeled PPEC-1 and PPEC-2) were discovered within the half-mile built-environment study radius surrounding the plant site, laydown area, and linear facilities. Following the field survey, the applicant documented the three properties using the California Department of Parks and Recreation (DPR) 523 series forms. Properties that did not appear to be older than 45 years, or were known to be less than 45 years old, were not recorded. The three built-environment resources identified as being older than 45 years are described in detail below.

P-37-031491 Historic Otay Mesa Road

This resource was previously documented in 2010; however, the documentation did not assess the integrity of the resource or its eligibility as a historical resource for the purposes of CEQA.

As described by the applicant in the AFC, Otay Mesa Road first appears on a 1904 topographic map and connects Otay Mesa to the Tijuana River Valley from approximately Paseo de la Fuente and Otay Mesa Road on the east to approximately Beyer Boulevard and Interstate-905 on the west, a distance of approximately nine miles (PPEC 2011d, p. 7-11). Much of the road is now labeled as State Route (SR) 905 and Interstate 905 (I-905), and these portions generally feature four to six lanes, asphalt paving material, paved shoulders (most with concrete curbs), and a tall metal fence between the east and west lanes. The portion of Otay Mesa Road to the east of Harvest Road is two lanes with varying shoulder width (some nearly two lanes deep). The

portion of the road between Alta Road and Paseo de la Fuente is currently unpaved and inaccessible. The vast majority of the road conforms to its original alignment but has been widened in most areas. In addition, the road once terminated at the railroad, but due to the construction of Interstate 805 (I-805), the road now turns south. A 1975 topographic map shows the road west of I-805 as unpaved; however, it is now paved, with the exception of that portion to the east of Alta Road (PPEC 2011d, p. 7-12).

PPEC-1 Kuebler Ranch Complex

The property identified as the Kuebler Ranch is currently comprised of two single-family residences (one converted to a restaurant), two silos, and one large outbuilding. According to the current property owner, the Kuebler Ranch house (now a restaurant) was constructed circa 1909. The other residence was constructed circa 1953. The two silos, which are identical in material and form, were constructed between 1953 and 1964, based on aerial imagery. The large outbuilding was constructed in 1989. According to the applicant's research, the property also once included a barn and long outbuilding that first appear on the 1953 aerial (PPEC 2011d, p. 7-9). The barn was demolished between 1994 and 2002. The long outbuilding was demolished in 1989. The parking lot for the restaurant appears to have been constructed sometime after 2005.

The single-family residence, which has been converted to a restaurant (Alta Café/Alta Latin Grille), is a Spanish Colonial Revival-style building. The cross-gabled roof is covered with clay mission tiles. There is one exterior chimney on the south elevation, which is stuccoed and topped with brick. The walls are also stucco-clad. The windows appear to be wood frame multi-light sashes with sills. The main entry is on the west façade. There is a driveway near the northwest corner of the building and a low stuccoed wall surrounds the building and the landscaped yard. A paved parking lot for the restaurant is directly to the west. Northwest of the restaurant is a second vernacular residence. The medium-pitch, side-gable roof with a front-gable porch is covered with various types of composite shingles. The window and door arrangements and materials were not visible, and the wall cladding material could not be determined. The two silos, located northeast of the restaurant and east of the vernacular residence, are identical to one another in material and form, with circular footprints and north-facing orientations. They are approximately one-and-a-half stories tall with conical roofs. Each silo has a single door entry on the north, and the wall and roofing materials are metal sheeting. The large outbuilding is located immediately east of the silos. The building has a rectangular footprint. The front-gable roof has a very slight pitch and is covered with metal sheeting. The wall materials are also metal sheeting, and there are three garage-style rolling doors on both the north and south elevations.

The applicant observed that the parcel has undergone extensive ground disturbance due to development and is primarily covered with landscaping, debris, and pavement. According to the applicant, the building complex was once surrounded by cultivated fields and fenced pasture, but presently, the property is used for vehicle and debris storage (PPEC 2011d, p. 7-9).

PPEC-2 Residence and Outbuildings at 6940 Otay Mesa Road

The property at 6940 Otay Mesa Road contains a Ranch-style, single-family residence, constructed between 1964 and 1968 on the south side of the parcel, and three outbuildings, constructed prior to 1953, at the north (rear) side of the parcel (PPEC 2011d, p. 7-10).

The residence is a single-story building with an L-shaped footprint. The building has a low-pitch, cross-gable roof (with a pent roof in the center of the primary elevation) covered with asphalt shingles. There is a brick chimney on the center rear of the roof. The walls are clad in various materials, including clapboard siding, board and batten siding, stucco, and stone veneer. The windows are arranged asymmetrically. On the primary elevation, the windows are three-part fixed glass or louvered glass and aluminum metal frames. The main entry is off-centered on the primary elevation and contains a single door; the door material was not visible. The residence features a two-car garage on the east end of the primary elevation with what appears to be a vinyl panel rolling door. Based on the applicant's observations, most of the residence's materials appear to be of historic age with the exception of the garage door material (PPEC 2011d, p. 7-11).Three large outbuildings are located behind the residence; however, views of these were obstructed by walls, trees, and the residence. Based on the applicant's view from Otay Mesa Road, as well as reviews of aerial imagery, the outbuildings appear to be one-story with rectangular footprints, featuring low-pitch, side-gable, metal-sheet roofs and various types of windows and entries, including garage door-sized openings. Because of the obstructed view, the applicant was unable to determine if the building materials for the outbuildings are of historic age. A brick wall and a chain-link fence mark the eastern boundary of the parcel. A concrete block wall topped with a single row of bricks marks the northern boundary. The west and north boundaries are bordered with a chain link fence, and an electric metal gate secures the driveway from Otay Mesa Road.

The applicant observed that the parcel has undergone extensive ground disturbance due to development and is covered with landscaping, debris, and pavement. The applicant's review of the historic aerials from 1953 to 2005 did not reveal any major additions or alterations to buildings on the property after the construction of the residence between 1964 and 1968. The current residence replaced a smaller residence that is depicted on the 1953 aerial image (PPEC 2011d, p. 7-11).

Summary of Identified Cultural Resources

The archaeological field survey failed to identify any new archaeological sites or any of the previously recorded archaeological sites that had been documented within the project area of analysis with the exception of one site, CA-SDI-10297/H. Based on the literature review and records research for the previously recorded archaeological resources in the PPEC project area of analysis, the treatment of these sites over the past several years has been documented in a number of cultural resource investigation reports, as discussed in detail in the Background Inventory Research section of this report. The previous treatment of these archaeological sites has largely involved surface collections of artifacts, test excavations, data recovery excavations, construction monitoring, and, ultimately, destruction of the sites as a result of construction activities

following testing and data recovery efforts. Based on the history of treatment for these sites, Energy Commission cultural resources staff concurs with the applicant that no surface evidence of the previously recorded sites exists within the project limits, with the exception of site CA-SDI-10297/H, which is located in an archaeological conservation easement area through which Transmission Line Route B is proposed. Thus, one archaeological site, CA-SDI-10297/H, currently exists within the PPEC project area of analysis.

The built-environment survey resulted in the identification of one previously recorded resource (Otay Mesa Road, P-31-031491) and two newly identified resources (Kuebler Ranch, PPEC-1, and a residential property at 6940 Otay Mesa Road, PPEC-2), both of which meet the age criterion (older than 45 years) for consideration as a historical resource. Cultural Resource Table 3, below, summarizes the cultural resources identified as currently existing within the project limits.

CULTURAL RESOURCES TABLE 3
Cultural Resources Located Within the Proposed PPEC Project

Resource Type/ Designation	Resource Description	Previously Known/New	Information Source
Prehistoric Archaeological Resources	**CA-SDI-10297/H** Prehistoric Archaeological Site	Previously known	CHRIS Records
Historical Archaeological Resources	**None**	N/A	N/A
Ethnographic Resources	**None**	None	None
Built-Environment Resources	**P-31-031491** Otay Mesa Road	Previously known	CHRIS Records
	PPEC-1 Kuebler Ranch Complex	New	Applicant's built-environment survey
	PPEC-2 Residential Property at 6940 Otay Mesa Road.	New	Applicant's built-environment survey

METHODS AND THRESHOLDS FOR DETERMINING THE HISTORICAL SIGNIFICANCE OF CULTURAL RESOURCES

CEQA requires the Energy Commission, as a lead agency, to evaluate the historical significance of cultural resources by determining whether they meet several sets of specified criteria. Under CEQA, a historically significant cultural resource is referred to as a "historical resource," which is 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)).

The criteria for listing in the CRHR are essentially the same as the eligibility criteria for the National Register of Historical Places (NRHP). In addition to being at least 50 years old,[4] 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 a master, or possesses high artistic values; or
- Criterion 4 - has yielded, or may be likely to yield, information important to history or prehistory.

Historical resources must also possess sufficient integrity of location, design, setting, materials, workmanship, feeling, and association to convey their historical significance (Cal. Code Regs., tit. 14, § 4852(c)).

Cultural resources listed in or formally determined eligible for the NRHP and California Registered Historical Landmarks numbered No. 770 and up are automatically listed in the CRHR and, therefore, are also historical resources (Pub. Resources Code, § 5024.1(d)). Even if a cultural resource is not listed or determined to be eligible for listing in the CRHR, CEQA allows a lead agency to make a determination as to whether it is a historical resource (Pub. Resources Code, § 21084.1).

The assessment of potential adverse impacts to historical resources and the mitigation that may be required to avoid or reduce those impacts depend on the lead agency's evaluations and determination of significance.

CRHR EVALUATIONS

Under CEQA, only historically significant cultural resources that the proposed project could potentially impact need to be considered in staff's recommendations for mitigation measures for project impacts. Consequently, staff seeks CRHR eligibility recommendations for those cultural resources subject to possible project impacts. The

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

existing documentation for previously known cultural resources may include CRHR eligibility recommendations, and the applicant's cultural resources specialists often make CRHR eligibility recommendations for newly identified cultural resources they discover and record in their project-related surveys. Staff considers these prior CRHR eligibility evaluations and may accept them or conclude that additional information is needed before making its own recommendations for determinations of significance.

When the available information on known or newly identified resources that could be impacted by the proposed project is not sufficient for staff to make a recommendation on CRHR eligibility, staff may ask an applicant to conduct additional research to gather the information needed to make such a recommendation, or staff may gather the additional information. For an archaeological resource, the additional research usually entails some degree of field excavation, called a "Phase II" investigation. For an ethnographic resource, the additional research may be an ethnographic study. For built-environment resources, the additional research would probably be archival. The object of this additional research is to obtain sufficient information to enable staff to validate or make a recommendation of CRHR eligibility for each cultural resource that the proposed project could impact.

Prehistoric Archaeological Resources

CA-SDI-10297/H

One prehistoric archaeological site, CA-SDI-10297/H, occurs within the PPEC project area of analysis. As discussed in detail above in the Background Inventory Research section of this report, site CA-SDI-10297/H has been previously subject to repeated archaeological testing. On the basis of the testing, this site was determined eligible for the CRHR by a qualified professional archaeologist (Brian Smith and Associates 2005).

Historical Archaeological Resources

No historical archaeological resources were identified within the PPEC project limits.

Native American Ethnographic Resources

Contacts with the NAHC and the local Native American representatives in the project vicinity have identified no ethnographic resources within the PPEC project area of analysis.

Built-Environment Resources

Three built-environment resources, which meet the age criterion for consideration as historical resources for the purposes of CEQA were identified within the PPEC project area of analysis. Discussion of evaluations and the CRHR-eligibility of each property are detailed below.

P-37-031491 Historic Otay Mesa Road

Based on the applicant's historical research and field survey of the property, the portion of Historic Otay Mesa Road within the PPEC project area of analysis does not appear to meet the eligibility criteria as a historical resource for the purposes of CEQA or for

inclusion on the CRHR. The applicant's research has yielded no information indicating an association with significant historic events or people (Criteria 1 and 2 of the CRHR), nor does it embody the distinctive characteristics of an architectural style, type or period, or represent the work of a master (Criterion 3 of the CRHR), or have the potential to yield important information (Criterion 4 of the CRHR) (PPEC 2011d, p. 7-12).

According to the applicant, Otay Mesa Road was one of several roads in the area that led toward San Diego in the early twentieth century. It appears to have been first created out of necessity for the occupants of Otay Mesa and was gradually improved as users' needs changed from horse-drawn vehicles to automobiles. It is not a purposely-engineered road that serves as a distinctive example. It does not have a specific or important association with any of the area's historic people or events, such as the early farming practices on Otay Mesa, the Navy airfield, or the establishment of detention facilities, nature reserves, industrial parks and facilities, or power generating facilities that define Otay Mesa's history. Rather, the changes in the alignment and loss of original materials have reduced the integrity of the historic setting and feeling. As such, the applicant has concluded that the road does not appear to be eligible for listing to the CRHR or qualify as a historical resource for the purpose of CEQA (PPEC 2011d, p. 7-12). Based on the literature research and the information provided by the applicant, Energy Commission cultural resources staff concurs with the applicant that the Otay Mesa Road is not a historical resource for the purposes of CEQA.

PPEC 1 Kuebler Ranch Complex

Based on the applicant's historical research and field survey of the property, the Kuebler Ranch House Complex does not appear to qualify as a historical resource for the purposes of CEQA or meet the criteria for inclusion in the CRHR. The applicant's research has yielded no information indicating an association with important historic events or people (Criteria 1 and 2 of the CRHR), nor does it embody the distinctive characteristics of an architectural style, type or period, or represent the work of a master (Criterion 3 of the CRHR), or have the potential to yield important information (Criterion 4 of the CRHR) (PPEC 2011d, p. 7-12).

According to the applicant, this circa 1909 residence is a modest example of the Spanish Colonial Revival style, and the vernacular residence, silos, and outbuildings are representative of early twentieth-century utilitarian construction, which has been well documented in California and the West (PPEC 2011d, p. 7-10). While the Kuebler Ranch was one of the largest ranches on Otay Mesa during the early twentieth-century, the buildings no longer retain their integrity of setting and feeling as an early twentieth century ranch complex. The property surrounding it has been significantly graded, the ranch house converted to a restaurant, numerous associated buildings (barn and several outhouses) demolished, and the property used for vehicle and debris storage. As such, the applicant has concluded that the complex does not appear to be eligible for listing on the CRHR or as a historical resource for the purpose of CEQA (PPEC 2011d, p. 7-10). Based on the literature research and the information provided by the applicant, staff concurs that the Kuebler Ranch is not a historical resource for the purposes of CEQA.

PPEC 2 Residence at 6940 Otay Mesa Road

Based on the applicant's historical research and field survey of the property, the residence at 6940 Otay Mesa Road does not appear to meet the criteria for eligibility for inclusion in the CRHR or qualify as a historical resource for the purposes of CEQA. The applicant's research has yielded no information indicating an association with significant historic events or people (Criteria 1 and 2 of the CRHR), nor does it significantly embody the distinctive characteristics of an architectural style, type or period, or represent the work of a master (Criterion 3 of the CRHR), or have the potential to yield important information (Criterion 4 of the CRHR) (PPEC 2011d, p. 7-11).

According to the applicant, the residence is a modest example of a Ranch-style home and the outbuildings at the rear are not distinctive. Furthermore, the building does not have a specific or important association with any of the area's historic people or events, such as the early farming practices or aviation that define Otay Mesa's history. As such, the applicant has concluded that the building does not appear to be eligible for listing on the CRHR or as a historical resource for the purposes of CEQA (PPEC 2011d, p. 7-11). Based on the literature research and the information provided by the applicant, staff concurs that the residence at 6940 Otay Mesa Road is not a historical resource for the purposes of CEQA.

Summary of Historical Significance of Identified Resources

As a result of the cultural resources investigation for the PPEC project, **one** resource (prehistoric archaeological site CA-SDI-10297/H), has been identified as a CRHR-eligible cultural resource for the purposes of CEQA. The remaining three historic-era built-environment properties (P-37-031491, PPEC-1, PPEC-2) identified within the project area of analysis are not CRHR-eligible cultural resources and, therefore, any project impacts to them would not be significant and would require no mitigation. These resources will not be discussed further. Cultural Resources Table 4, below, summarizes the resources identified within the PPEC project area of analysis and their corresponding eligibility for the CRHR.

CULTURAL RESOURCES TABLE 4
CRHR-Eligible Cultural Resources Potentially Subject to Impacts from the Proposed Project

Resource Type, Designation	Resource Description	CRHR-Eligible? Recommended By:
Prehistoric Archaeological Resources	**CA-SDI-10297/H** Prehistoric Archaeological Site	**Yes**; previously determined significant by Brian Smith and Associates (2005)
Historical Archaeological Resources	**None** identified within the PPEC project	**N/A**
Ethnographic Resources	**None** identified within the PPEC project	**N/A**
Built-Environment Resource	**P-37-031-491** Historic Otay Mesa Road	**No**; recommended *not* CRHR-eligible by the applicant. Staff concurs.
Built-Environment Resource	**PPEC-1** Kuebler Ranch Complex	**No**; recommended *not* CRHR-eligible by the applicant. Staff concurs.
Built-Environment Resource	**PPEC-2** Residence at 6940 Otay Mesa Road	**No**; recommended *not* CRHR-eligible by the applicant. Staff concurs.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Method and Threshold for Determining Significance of Impacts to Historical Resources

Under CEQA, “a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment” (Pub. Resources Code, § 21084.1). Staff has established CRHR eligibility as the threshold of significance for cultural resources. Thus, staff analyzes whether a proposed project would cause a substantial adverse change in the significance, that is, the CRHR eligibility, of all historical resources identified in the Cultural Resources Inventory as CRHR eligible. The degree of significance of an impact depends on:

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

DIRECT AND INDIRECT IMPACTS

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

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

Ground disturbance accompanying construction at a proposed plant site, along proposed linear facilities, or at a proposed laydown area has the potential to directly impact as-yet-unknown archaeological resources. 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 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

To identify project-related impacts to cultural resources that would need to be mitigated, staff first identifies all CRHR-eligible cultural resources (above). In the next step in its analysis, staff must evaluate the potential project impacts to the identified CRHR-eligible cultural resources to determine if these impacts would be substantial and adverse (significant under CEQA). Staff then must recommend mitigation measures to avoid or reduce any significant impacts to CRHR-eligible resources to the extent feasible. Staff also must assess whether the proposed project has the potential to impact as-yet-

unknown buried archaeological resources and recommend mitigation measures to avoid or reduce any potentially significant impacts.

Identification and Assessment of Direct Impacts and Recommended Mitigation

Prehistoric archaeological site, CA-SDI-10297/H, is the only CRHR-eligible cultural resource identified within the PPEC project area of analysis. Site CA-SDI-10297/H lies within a portion of the proposed Transmission Line Alternative Route B. Site CA-SDI-10297/H is currently protected by an Open Space Archaeological Conservation Easement (*Easement in Favor of the County of San Diego for Archaeological Conservation, recorded September 13, 2001, as File No. 2001-0657833, O.R.*). The language of the easement specifically prohibits the following activities on any portion of the land subject to the easement: grading; excavation; placement of soil, sand, rock, gravel or other material; clearing of vegetation; construction, erection or placement of any building or structure; vehicular activities; trash dumping; or use for any purpose other than as open space. The sole exceptions to the restrictions include: scientific investigations by professional archaeologists; implementation of a site-capping plan; or implementation of a grading, monitoring, and data recovery plan prior to the issuance of a grading permit by the County.

In the event Transmission Line Alternative Route B is selected for the PPEC project, the applicant has indicated that the construction, operation, and maintenance of the line would not disturb the archaeological easement area and has stated that it will design, construct, operate, and maintain the transmission line in a manner that will not result in any encroachment or disturbance to site CA-SDI-10297/H (PPEC 2011x). However, the applicant will need to provide additional information regarding their proposed design and construction of Transmission Line Alternative Route B, as requested by staff (CEC 2011x, tn 63103). As any project-related impacts to CRHR-eligible site CA-SDI-10297/H would be considered significant under CEQA, Condition of Certification, **CUL-9**, would require the project owner to completely avoid any encroachment upon or ground disturbance within the boundaries of the designated archaeological conservation easement and abide by all restrictions identified in said archaeological easement. The applicant will be required to provide a full description of the construction, operation, and maintenance of Transmission Line Alternative Route B and produce a map figure, based on County Parcel Map 20473, that depicts the planned transmission line pole locations, transmission line right-of-way, all construction staging areas, and all access routes and areas. Staff has concluded that implementation of Condition of Certification, **CUL-9**, would result in complete avoidance of any project-related impacts to known historical resources within the archaeological easement.

CEQA advises a lead agency to make provisions for archaeological resources unexpectedly and inadvertently encountered during construction, and a project owner may be required to train workers to recognize cultural resources, fund mitigation, and delay construction in the area of the find (Pub. Resources Code, § 21083.2; Cal. Code Regs., tit. 14, §§ 15064.5(f) and 15126.4(b)). Consequently, staff recommends that procedures for identifying, evaluating, and possibly mitigating impacts to archaeological resources discovered during construction be put in place through conditions of certification that would reduce those impacts to a less than significant level.

Staff recommends Conditions of Certification **CUL-1** through **CUL-9** to ensure that all potential impacts to significant cultural resources are mitigated to below the level of significance. Staff's proposed Conditions of Certification **CUL-1** through **CUL-8** are intended to provide for the contingency of discovering archaeological resources during construction of the PPEC project and related activities.

Staff's proposed **CUL-1** requires a Cultural Resources Specialist (CRS) to be retained and available during PPEC project construction-related excavations to evaluate any discovered buried resources and, if necessary, to conduct data recovery as mitigation for the project's unavoidable impacts on them. **CUL-2** requires the project owner to provide the CRS with all relevant cultural resources information and maps. **CUL-3** requires the CRS to write and submit to the Energy Commission Compliance Project Manager (CPM) a Cultural Resources Monitoring and Mitigation Plan (CRMMP). **CUL-4** requires the CRS to write and submit to the CPM a final report on all cultural resources monitoring and mitigation activities for the PPEC project. **CUL-5** requires the project owner to train workers to recognize cultural resources and instruct them to halt construction if cultural resources are discovered. Given the high frequency of cultural resources identified in and around the project area, **CUL-6** prescribes the monitoring, by an archaeologist and, possibly, by a Native American representative, to identify any unanticipated archaeological deposits encountered during construction of the linear facilities. **CUL-7** requires the project owner to halt ground-disturbing activities in the area of an archaeological discovery and to fund data recovery, if the discovery is evaluated as historically significant. **CUL-8** would address impacts related to the use of a soil borrow site that has not been surveyed for cultural resources in the past five years. **CUL-9** would ensure that the applicant prepares and conforms to a design, construction, operation, and maintenance plan for the complete avoidance of significant archaeological site CA-SDI-10297/H.

Identification and Assessment of Indirect Impacts and Recommended Mitigation

Neither the applicant nor Energy Commission cultural resources staff has identified any indirect impacts to identified cultural resources in the PPEC project area of analysis. Therefore, no mitigation measures for indirect impacts would be required for cultural resources.

Operation Impacts and Mitigation

Operational plans submitted as part of the AFC did not identify any activities that would require significant ground disturbance during the operational and maintenance phases of the PPEC project. During operation of the proposed power plant, circumstances may develop that would require ground disturbance. As it is likely this ground disturbance would occur in soils and sediments disturbed during previous project construction, such repairs should not result in the discovery of or impact to unknown subsurface archaeological resources. Consequently, at this time staff has not identified any potential impacts once construction is completed; therefore, no additional mitigation or conditions of certification are required. However, should activities require ground disturbance in previously undisturbed soils and sediments, implementation of the applicable conditions of certification CUL-1 through CUL-9 shall be required, as

identified during the review of any Petition to Amend, to reduce any potential impacts to a less than significant level.

Cumulative Impacts and Mitigation

Staff has concluded that the PPEC project would have no impacts to known cultural resources. Conditions of Certification **CUL-1 through CUL-9** would reduce any potential impacts to unanticipated discoveries found to be historically significant.

COMPLIANCE WITH LORS

If the recommended conditions of certification are fully implemented, the proposed PPEC project would result in no impacts to known cultural resources, and any impacts to historically significant archaeological resources discovered during construction would be mitigated to a less-than-significant level. The project would therefore be in compliance with the applicable state laws, ordinances, regulations, and standards listed in Cultural Resources Table 1, above.

The County of San Diego's General Plan has language promoting the general county-wide preservation of cultural resources. The conditions of certification require specific actions not just to promote but to effect historic preservation and mitigate impacts to all cultural resources in order to ensure CEQA compliance. Consequently, implementation of Conditions of Certification **CUL-1 through CUL-9** would ensure the PPEC project is consistent with the general historic preservation goals of the County of San Diego.

CONCLUSIONS AND RECOMMENDATIONS

Staff's analysis has determined that one historically significant, CRHR-eligible cultural resource, CA-SDI-10297/H, is located within the PPEC project area, but would be entirely avoided by the proposed project. Therefore, staff concludes that the PPEC project would have no impact on known historically significant archaeological resources, ethnographic resources, individual built-environment resources, or historic districts.

In the unlikely event that previously unknown, historically significant cultural resources are discovered during construction, adoption and implementation of Conditions of Certification **CUL-1** through **CUL-9** would reduce any potential impacts to these resources to a less than significant level. Additionally, the adoption and implementation of these conditions would ensure that the PPEC project is consistent with all applicable LORS.

PROPOSED CONDITIONS OF CERTIFICATION

CUL-1 Prior to the start of construction-related ground disturbance or grading, boring, and trenching, as defined in the General Conditions for this project; surface grading or subsurface soil work during pre-construction activities or site mobilization; or mowing activities and heavy equipment use in loose or sandy soils, at the site and for access roads and linear facilities, the project

owner shall obtain the services of a Cultural Resources Specialist (CRS) and one or more Alternate CRS(s). The project owner shall submit the resumes and qualifications for the CRS, CRS alternates, and all technical specialists to the CPM for review and approval.

The CRS shall manage all cultural resources monitoring, mitigation, curation, and reporting activities, and any pre-construction cultural resources activities (e.g., geoarchaeology or data recovery), unless management of these is otherwise provided for in accordance with the cultural resources Conditions of Certification (Conditions). The CRS may elect to obtain the services of Cultural Resources Monitors (CRMs) and other technical specialists, if needed, to assist in monitoring, mitigation, and curation activities. The project owner shall ensure that the CRS makes recommendations regarding the eligibility for listing in the California Register of Historical Resources (CRHR) of any cultural resources that are newly discovered or that may be affected in an unanticipated manner.

No construction-related ground disturbance or grading, boring, and trenching, as defined in the General Conditions for this project; surface grading or subsurface soil work during pre-construction activities or site mobilization; or mowing activities and heavy equipment use in loose or sandy soils, at the site, access roads, and linear facilities, shall occur prior to Compliance Project Manager (CPM) approval of the CRS and alternates, unless such activities are specifically approved by the CPM.

Approval of a CRS may be denied or revoked for reasons including, but not limited to non-compliance on this or other Energy Commission projects and concurrent service as CRS on an unmanageable number of Energy Commission projects, as determined by the CPM. After all construction-related ground disturbance is completed and the CRS has fulfilled all responsibilities specified in these cultural resources conditions, the project owner may discharge the CRS, if the CPM approves. With the discharge of the CRS, these cultural resources conditions no longer apply to the construction activities of this power plant.

If, during operation of the proposed power plant, circumstances develop that would require ground disturbance in soils or sediments previously undisturbed during project construction, no surface grading or subsurface soil work shall occur prior to submission of a Petition to Modify and CPM review and approval of project-specific protocol for addressing unanticipated discoveries, consistent with the approved Cultural Resources Mitigation and Monitoring Plan (CRMMP).

CULTURAL RESOURCES SPECIALIST

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

Regulations, part 61 (36 C.F.R., part 61). In addition, the CRS and alternate(s) shall have the following qualifications:

1. Qualifications appropriate to the needs of the project, including a background in anthropology, archaeology, history, architectural history, or a related field;

2. At least three years of archaeological or historical, as appropriate (per nature of predominant cultural resources on the project site), resources mitigation and field experience in California; and

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

The resumes of the CRS and alternate CRS shall include the names and telephone numbers of contacts familiar with the work of the CRS/alternate CRS on referenced projects and demonstrate to the satisfaction of the CPM that the CRS/alternate CRS has the appropriate training and experience to implement effectively the Conditions.

CULTURAL RESOURCES MONITORS
CRMs shall have the following qualifications:

1. B.S. or B.A. degree in anthropology, archaeology, historical archaeology, or a related field, and one year experience monitoring in California; or

2. A.S. or A.A. degree in anthropology, archaeology, historical archaeology, or a related field, and four years experience monitoring in California; or

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

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

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

At least 10 days prior to a termination or release of the CRS, or within 10 days after the resignation of a CRS, the project owner shall submit the resume of the proposed new CRS, if different from the alternate CRS, to the CPM for review and approval. At the same time, the project owner shall also provide to the proposed new CRS the AFC and all cultural resources documents, field notes, photographs, and other cultural resources materials generated by the project. If no alternate CRS is available to assume the duties

of the CRS, the project owner shall designate a CRM to serve in place of a CRS for a maximum of 3 days. If cultural resources are discovered, ground disturbance will remain halted until there is a CRS or alternate CRS to make a recommendation regarding significance.

At least 20 days prior to ground disturbance, the CRS shall provide a letter naming CRMs and attesting that the identified CRMs meet the minimum qualifications for cultural resources monitoring required by this Condition.

At least 5 days prior to additional CRMs beginning on-site duties during the project, the CRS shall provide letters to the CPM identifying the new CRMs and attesting to their qualifications.

At least 10 days prior to any technical specialists, other than CRMs, beginning tasks, the resume(s) of the specialists shall be provided to the CPM for review and approval.

At least 10 days prior to the start of ground disturbance, the project owner shall confirm in writing to the CPM that the approved CRS will be available for onsite work and is prepared to implement the cultural resources conditions.

CUL-2 Prior to the start of ground disturbance, if the CRS has not previously worked on the project, the project owner shall provide the CRS with copies of the AFC, data responses, confidential cultural resources reports, all supplements, the Energy Commission cultural resources Final Staff Assessment (FSA), and the cultural resources Conditions of Certification from the Final Decision, for the project. The project owner shall also provide the CRS and the CPM with maps and drawings showing the footprints of the power plant, all linear facility routes, all access roads, and all laydown areas. Maps shall include the appropriate USGS quadrangles and a map at an appropriate scale (e.g., 1:24,000 or 1" = 200') for plotting cultural features or materials. If the CRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the CRS and CPM. The CPM shall review 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.

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.

Verification: At least 40 days prior to the start of ground disturbance, the project owner shall provide the AFC, data responses, confidential cultural resources documents, all supplements, and the FSA 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.

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.

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.

Weekly, during ground disturbance, a current schedule of anticipated project activity shall be provided to the CRS and CPM by letter, e-mail, or fax.

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.

CUL-3 Prior to the start of ground disturbance, the project owner shall submit the Cultural Resources Monitoring and Mitigation Plan (CRMMP), as prepared by or under the direction of the CRS, to the CPM for review and approval. The CRMMP shall 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 include, but not be limited to, the following elements and measures:

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

2. A proposed general research design that includes a discussion of archaeological research questions and testable hypotheses specifically

applicable to the project area, and a discussion of artifact collection, retention/disposal, and curation policies as related to the research questions formulated in the research design. The research design 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 and mapped and photographed. In addition, all archaeological materials retained as a result of the archaeological investigations (survey, testing, data recovery) shall be curated in accordance with the California State Historical Resources Commission's *Guidelines for the Curation of Archaeological Collections*, into a retrievable storage collection in a public repository or museum.

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 Native American Heritage Commission (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 ARMR guidelines.

Verification: After 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.

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.

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).

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 California State Historical Resources Commission's *Guidelines for the Curation of Archaeological Collections*, to accept the cultural materials from this project. Any agreements concerning curation will be retained and available for audit for the life of the project.

CUL-4 The project owner shall submit the final Cultural Resources Report (CRR) to the CPM for approval. The final CRR shall be written by or under the direction of the CRS and shall be provided in the ARMR format. The final CRR shall report on all field activities including dates, times and locations, results, samplings, and analyses. All survey reports, DPR 523 forms, data recovery reports, and any additional research reports not previously submitted to the California Historical Resource Information System (CHRIS) and the State Historic Preservation Officer (SHPO) 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: 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.

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.

Within 10 days after CPM approval of the CRR, the project owner shall provide documentation to the CPM confirming that copies of the final CRR have been provided to the SHPO, the CHRIS, the curating institution, if archaeological materials were collected, and to the Tribal Chairpersons of any Native American groups requesting copies of project-related reports.

CUL-5 Prior to and for the duration of 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. 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: At least 30 days prior to the beginning of ground disturbance, the CRS shall provide the cultural resources WEAP training program draft text, including Native American participation, graphics, and the informational brochure to the CPM for review and approval.

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.

Monthly, until ground disturbance is completed, the project owner shall provide in the Monthly Compliance Report (MCR) the WEAP Training Acknowledgement forms of workers who have completed the training in the prior month and a running total of all persons who have completed training to date.

CUL-6 Prior to the start of site mobilization along the linear facilities route(s), the project owner shall notify the CPM of the date(s) that ground disturbance will begin. The project owner shall ensure that full-time monitoring of all ground disturbing activities (as identified in CUL-1) by the CRS, alternate CRS, or CRMs shall occur throughout the construction process. No monitoring within the plant site or laydown area is required.

Where excavation equipment is actively removing dirt and hauling the excavated material farther than fifty 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 fifty feet from the location of active excavation, one monitor shall both observe the location of active excavation and inspect the dumped material.

At the request of a Native American tribal representative with ancestral ties to the project area, the project owner shall be required to obtain the services of one or more Native American representatives to monitor ground disturbance in the locations of all project linear facilities. Contact lists of interested Native Americans and guidelines for monitoring shall be obtained from the Native American Heritage Commission. Preference in selecting a monitor shall be given to Native Americans with traditional ties to the area where the project is located, but the project owner shall make a reasonable and good faith effort to accommodate equally all groups expressing the desire to monitor. If efforts

to obtain the services of at least one qualified Native American monitor, acceptable to all groups that want monitoring, are unsuccessful, the project owner shall immediately inform the CPM. The CPM may either identify potential monitors or allow ground disturbance to proceed without a Native American monitor.

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. Copies of the daily monitoring logs shall be provided by the CRS to the CPM, if requested by the CPM. From these 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 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 by telephone or e-mail within 24 hours. The CRS shall also recommend corrective action to resolve the problem or achieve compliance with the Conditions. When the issue is resolved, the CRS shall write a report describing the issue, the resolution of the issue, and the effectiveness of the resolution measures. This report shall be provided in the next MCR for the review of the CPM.

Verification: 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.

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.

Monthly, while monitoring is on-going, the project owner shall include in each MCR a copy of the monthly summary report of cultural resources-related monitoring prepared by the CRS and shall attach any new DPR 523A forms completed for finds treated prescriptively, as specified in the CRMMP.

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.

Daily, as long as no cultural resources are found, the CRS shall provide a statement that "no cultural resources over 50 years of age were discovered" to the CPM as an e-mail or in some other form of communication acceptable to the CPM.

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.

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

In the event that a cultural resource over 50 years of age is found (or if younger, determined exceptionally significant by the CPM), or impacts to such a resource can be anticipated, ground disturbance shall be halted or redirected in the immediate vicinity of the discovery sufficient to ensure that the resource is protected from further impacts. If the discovery includes human remains, the project owner shall comply with the requirements of Health and Human Safety Code § 7050.5(b) and shall notify the CPM and the NAHC of the discovery of human remains. No action shall be initiated without direction from the CPM. Monitoring and daily reporting, as provided in other conditions, shall continue during the project's ground-disturbing activities elsewhere. After the discovery of human remains, cultural resources monitoring of ground disturbance shall continue or be initiated, and shall include a Native American monitor pursuant to requirements in these conditions of certification. The halting or redirection of ground disturbance 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 have requested to be notified in the event of such a discovery within 24 hours of the discovery.

3. The CRS has completed field notes, measurements, and photography for a DPR 523 "Primary" form. Unless the find can be treated prescriptively, as specified in the CRMMP, the "Description" entry of the DPR 523 "Primary" form shall include a recommendation on the CRHR eligibility of the discovery. The project owner shall submit completed forms to the CPM.

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

Verification: 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.

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.

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 who have requested to be notified in the event of such a discovery, and the CRS must inform the CPM when the notifications are complete.

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.

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

CUL-8 If fill soils must be acquired from a non-commercial borrow site or disposed of to a non-commercial disposal site, unless less-than-five-year-old surveys of these sites for archaeological resources are documented to and approved by the CPM, the CRS shall survey the borrow and/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, other conditions shall apply. The CRS shall report on the methods and results of these surveys in the final CRR.

Verification: 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.

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.

CUL-9 In the event that Transmission Line Alternative Route B is selected for the PPEC project, the project owner shall design, construct, operate, and maintain the transmission line in a manner that avoids any and all encroachments and/or disturbances[5] to the Open Space Easement area (*Easement in Favor of the County of San Diego for Archaeological Conservation, recorded September 13, 2001 as File No. 2001-0657833, O.R.*), which protects CRHR-eligible site CA-SDI-10297/H, as depicted on Parcel Map 20473, Easement Area "C". The CRS or alternate CRS shall monitor all construction activities during the construction of Transmission Line Alternative Route B, consistent with Conditions of Certification CUL-1 through CUL-8.

Verification: At least 30 days prior to the initiation of PPEC project construction, the applicant shall submit to the CPM for review and approval, a map figure, based on Parcel Map 20473, that depicts the final design plans for the construction of Transmission Line Alternative Route B (including the precise power pole locations,

[5] "Encroachments and disturbances" are defined as: any grading; excavation; placement of soil, sand, rock, gravel, or other material; clearing of vegetation; construction, erection or placement of any building or structure; vehicular activities; trash dumping; or use for any purpose other than as open space.

transmission line rights-of-way, construction staging areas, and all points of access for construction and maintenance activities, relative to the Open Space Easement area.

At least 30 days prior to the initiation of construction, the applicant shall prepare and submit a written plan to the CPM for review and approval that describes in detail how the construction, operation, and maintenance of Transmission Line Alternative Route B will occur and will not encroach upon or disturb the Open Space Easement area that contains site CA-SDI-10297/H.

At least two weeks prior to the initiation of construction of Transmission Line Alternative Route B, the project owner shall notify both the CPM and the CRS, in writing (via letter or email), describing the schedule for transmission line construction.

CULTURAL RESOURCES ACRONYM GLOSSARY

PIO PICO ENERGY CENTER PROJECT

AD	Anno Domino; Years designated as after the birth of Christ
AFC	Application for Certification
ARMR	Archaeological Resource Management Report
BC	Years designated as before the birth of Christ; also BCE (Before Common Era)
BP	Before 1950
CEQA	California Environmental Quality Act
CHRIS	California Historical Resources Information System
Conditions	Conditions of Certification (COCs)
CRHR	California Register of Historical Resources
CRM	Cultural Resources Monitor
CRMMP	Cultural Resources Monitoring and Mitigation Plan
CRR	Cultural Resource Report
CRS	Cultural Resources Specialist
DPR 523	Department of Parks and Recreation cultural resource inventory form
FSA	Final Staff Assessment
LORS	Laws, ordinances, regulations, and standards
MCR	Monthly Compliance Report
MLD	Most Likely Descendent
NAHC	Native American Heritage Commission
NRHP	National Register of Historic Places
OHP	Office of Historic Preservation

PAA	Project Area of Analysis. The area within and surrounding the project site, laydown area, access roads, and all associated linear transmission and pipeline corridors. This includes all areas (both horizontally and vertically) where physical project activities could occur, including the full extent of all project components and alternatives. It also includes any cultural resources not within the area described above that could sustain direct or indirect nonphysical effects (such as visual, auditory, and/or atmospheric effects) as a result of the project or that may be identified by a consulting party, organization, governmental entity, or individual through consultation as having significance or being a resource of concern.
PPEC	Pio Pico Energy Center
Project Site	The bounded area(s) identified by the applicant as the area(s) within which they propose to build the project.
PSA	Preliminary Staff Assessment
SCIC	South Coastal Information Center (CHRIS), San Diego State University
SHPO	State Historic Preservation Officer
Staff	Energy Commission cultural resources technical staff
WEAP	Worker Environmental Awareness Program

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HAZARDOUS MATERIALS MANAGEMENT

Rick Tyler and Geoff Lesh P.E.

SUMMARY OF CONCLUSIONS

Staff's evaluation of the proposed Pio Pico Energy Center (PPEC) project, along with staff's proposed mitigation measures, indicates that hazardous materials use at the site would not present a significant impact to the public. With adoption of the proposed conditions of certification, the proposed project will comply with all applicable laws, ordinances, regulations, and standards. In response to Health and Safety Code, Section 25531 et seq., the applicant would be required to develop a risk management plan (or modify an existing one). 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 County of San Diego Department of Environmental Health (DEH) and the Energy Commission staff. In addition, staff's proposed conditions of certification require that staff review and approve the risk management plan prior to delivery of any hazardous materials to the PPEC project. Other proposed conditions of certification address the issue of the transportation, storage, and use of aqueous ammonia.

INTRODUCTION

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

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

Hazardous materials used during construction would include gasoline, diesel fuel, motor oil, hydraulic fluid, welding gases, lubricants, solvents, paint, and paint thinner. No acutely toxic hazardous materials will be used on site during construction. None of these materials pose significant potential for off-site impacts as a result of the quantities on site, their relative toxicity, their physical state, and/or their environmental mobility. Handling of hazardous materials during construction will comply with all applicable regulations.

During operations, aqueous ammonia (19 percent ammonia in aqueous solution) is the only acutely hazardous material proposed to be either used or stored at the PPEC in quantities exceeding the reportable amounts defined in the California Code of Regulations, Title 19, Division 2, Chapter 4.5, Section 2770.5, Table 3. Aqueous

ammonia will be used to control oxides of nitrogen (NOx) emissions through selective catalytic reduction. The use of aqueous ammonia significantly reduces the risk that would otherwise be associated with the use of the more hazardous anhydrous form of ammonia. Use of the aqueous form eliminates the high internal energy associated with the anhydrous form, which is stored as a liquefied gas at high pressure. The high internal energy associated with the anhydrous form of ammonia can act as a driving force in an accidental release, which can rapidly introduce large quantities of the material to the ambient air and result in high down-wind concentrations. Spills associated with the aqueous form are much easier to contain than those associated with anhydrous ammonia, and emissions from such spills are limited by the slow mass transfer from the surface of the spilled material. The use of 19 percent concentration also reduces the vapor pressure as compared to higher 30 percent aqueous concentrations, further reducing potential for impact.

Other hazardous materials, such as mineral and lubricating oils, cleaning detergents, welding gasses, and water treatment chemicals will also be present at the proposed PPEC during operation. The off-site risks posed by these materials are limited by their quantities, intrinsic hazard, and mobility.

Although no natural gas is stored, the project will also involve the handling of large amounts of natural gas. Natural gas poses some risk of both fire and explosion. The proposed PPEC project will require a new pipeline that would connect to and existing San Diego Gas and Electric (SDG&E) gas pipeline. The PPEC project operations would also require the transportation of aqueous ammonia to the facility. This document addresses all potential impacts associated with the use and handling of these hazardous materials.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

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

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

Applicable Law	Description
Federal	
The Superfund Amendments and Reauthorization Act of 1986 (42 USC §9601 et seq.)	Contains the Emergency Planning and Community Right To Know Act (also known as SARA Title III).
The Clean Air Act (CAA) of 1990 (42 USC 7401 et seq. as amended)	Established a nationwide emergency planning and response program and imposed reporting requirements for businesses that store, handle, or produce significant quantities of extremely hazardous materials.
49 CFR 172.800	The U.S. Department of Transportation (DOT) requirement that suppliers of hazardous materials prepare and implement security plans.

Applicable Law	Description
49 CFR Part 1572, Subparts A and B	Requires suppliers of hazardous materials to ensure that all their hazardous materials drivers are in compliance with personnel background security checks.
The Clean Water Act (CWA) (40 CFR 112)	Aims to prevent the discharge or threat of discharge of oil into navigable waters or adjoining shorelines. Requires a written spill prevention, control, and countermeasures (SPCC) plan to be prepared for facilities that store oil that could leak into navigable waters.
Title 49, Code of Federal Regulations, Part 190	Outlines gas pipeline safety program procedures.
Title 49, Code of Federal Regulations, Part 191	Addresses transportation of natural and other gas by pipeline: annual reports, incident reports, and safety-related condition reports. Requires operators of pipeline systems to notify the DOT of any reportable incident by telephone and then submit a written report within 30 days.
Title 49, Code of Federal Regulations, Part 192	Addresses transportation of natural and other gas by pipeline and minimum federal safety standards, specifies minimum safety requirements for pipelines including material selection, design requirements, and corrosion protection. The safety requirements for pipeline construction vary according to the population density and land use that characterize the surrounding land. This part also contains regulations governing pipeline construction (which must be followed for Class 2 and Class 3 pipelines) and the requirements for preparing a pipeline integrity management program.
Federal Register (6 CFR Part 27) interim final rule	A regulation of the U.S. Department of Homeland Security that requires facilities that use or store certain hazardous materials to submit information to the department so that a vulnerability assessment can be conducted to determine what certain specified security measures shall be implemented.
State	
Title 8, California Code of Regulations, section 5189	Requires facility owners to develop and implement effective safety management plans that ensure that large quantities of hazardous materials are handled safely. While such requirements primarily provide for the protection of workers, they also indirectly improve public safety and are coordinated with the Risk Management Plan (RMP) process.
Title 8, California Code of Regulations, section 458 and sections 500 to 515	Sets forth requirements for the design, construction, and operation of vessels and equipment used to store and transfer ammonia. These sections generally codify the requirements of several industry codes, including the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, the American National Standards Institute (ANSI) K61.1 and the National Boiler and Pressure Vessel Inspection Code. These codes apply to anhydrous ammonia but are also used to design storage facilities for aqueous ammonia.
California Health and Safety Code, section 25531 to 25543.4	The California Accidental Release Program (CalARP) requires the preparation of a Risk Management Plan (RMP) and off-site consequence analysis (OCA) and submittal to the local Certified Unified Program Agency for approval.
California Health and Safety Code, section 41700	Requires that “No person shall discharge from any source whatsoever such quantities of air contaminants or other material which causes injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property.”
California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)	Prevents certain chemicals that cause cancer and reproductive toxicity from being discharged into sources of drinking water.
California Public Utilities Commission General Order 112-E and 58-A	Contains standards for gas piping construction and service.

Hazardous Substance Information and Training Act, 8 CCR Section 339; Section 3200 et seq., 5139 et seq., and 5160 et seq.	Requires listing and implementation of specified control measures for management of hazardous substances.
California HSC Sections 25270 through 25270.13	Requires the preparation of a Spill Prevention, Control, and Countermeasures (SPCC) Plan if 10,000 gallons or more of petroleum is stored on-site. The above regulations would also require the immediate reporting of a spill or release of 42 gallons or more to the California Office of Emergency Services and the Certified Unified Program Authority (CUPA).
Process Safety Management: Title 8 CCR Section 5189	Requires facility owners to develop and implement effective process safety management plans when toxic, reactive, flammable, or explosive chemicals are maintained on site in quantities that exceed regulatory thresholds
Local	
County of San Diego Department of Environmental Health (DEH), Hazardous Materials Division (HMD).	Requires new/modified businesses to complete a Hazardous Materials Business Plan and Chemical Inventory forms when handling hazardous materials in excess of threshold quantities. County of San Diego DEH, HMD is the Certified Unified Program Agency (CUPA)

The Certified Unified Program Agency (CUPA) with the responsibility to review Risk Management Plans (RMPs) and Hazardous Materials Business Plans (HMBPs) is the County of San Diego DEH, HMD.

With regard to seismic safety issues, design and construction of buildings and vessels storing hazardous materials will meet the seismic requirements of the current 2010 California Building Standards Code (CBSC).

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.

Staff agrees with the applicant that use of F stability (stagnated air, very little mixing), wind speed of 1.5 meters per second, and an ambient temperature of 108°F are

appropriate for conducting the worst-case off-site consequence analysis (PPEC 2011a).

TERRAIN CHARACTERISTICS

The project site is a 10-acre site located San Diego County adjacent to the existing Otay Mesa Generating Facility in the south east quadrant at the intersection of Alta Road and Calzada De La Fuente.

The project site is near the western base of San Ysidro Mountains at an elevation of 635 feet above mean sea level. The terrain is generally flat to the west and south of the site. Aqueous ammonia is the only material used at the site that would pose risk of off-site impacts. The use of 19 percent ammonia concentration precludes impacts at distances where elevated receptor locations exist off-site.

LOCATION OF EXPOSED POPULATIONS AND SENSITIVE RECEPTORS

The general population includes many sensitive subgroups that may be at greater risk from exposure to emitted pollutants. These sensitive subgroups include the very young, the elderly, and those with existing illnesses. In addition, the location of the population in the area surrounding a project site may have a major bearing on health risk.
There are no sensitive receptor locations within three mile of the proposed facility PPEC 2011a). The nearest residences are located about 0.8 miles northeast of the proposed facility.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

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

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

Staff reviewed the applicant's proposed engineering and administrative controls concerning hazardous materials usage. Engineering controls are the physical or mechanical systems, such as storage tanks or automatic shut-off valves, that can prevent the release of hazardous material from occurring, or which can either limit the

release to a small quantity and/or confine it to a small area. Administrative controls are the rules and procedures that workers at the facility must follow that will help to prevent accidents or to keep them small if they do occur. Both engineering and administrative controls can act as methods of prevention or as methods of response and minimization. In both cases, the goal is to prevent a release from causing off-site impacts to the public.

Staff reviewed and evaluated the applicant's proposed use of hazardous materials as described by the applicant (PPEC 2011a). 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 the AFC including aqueous ammonia as listed in the revised off-site consequence analysis (PPEC 2011a) 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 mitigation measures also include engineering controls such as catchment basins and methods to keep vapors from spreading and administrative controls such as coordination with local emergency response agencies.
- Step 5: Staff analyzed the maximum potential impacts on the public of a worst-case spill of hazardous materials, as reduced by the mitigation measures proposed by the applicant. When mitigation methods proposed by the applicant are sufficient, no further mitigation is recommended. If the proposed mitigation is not sufficient to reduce the potential for adverse impacts to an insignificant level, staff will propose additional prevention and response controls until the potential for causing harm to the public is reduced to an insignificant level. It is only at this point that staff can recommend that the facility be allowed to use hazardous materials.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Small Quantity Hazardous Materials

Hazardous chemicals such as mineral and lubricating oils, cleaning detergents, welding gasses, and other various chemicals would be used and stored in relatively small amounts. (See Section 5.0 **Hazardous Materials Management** of the AFC, PPEC 2011a for a list of all chemicals proposed for use and storage at the PPEC project site). In conducting the analysis, staff determined in Steps 1 and 2 that these materials, although present at the proposed facility, pose a minimal potential for off-site impacts since they will be stored in small quantities, have low mobility/volatility, or have low levels of toxicity. These hazardous materials are eliminated from further consideration.

After removing from consideration those chemicals that pose no risk of off-site impact in

Steps 1 and 2, staff continued with Steps 3, 4, and 5 to review the remaining large quantity hazardous materials: natural gas and aqueous ammonia. The project will be limited to using, storing, and transporting only those hazardous materials listed in the AFC per staff's proposed condition **HAZ-1**.

Large Quantity Hazardous Materials

Natural Gas

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

While natural gas would be used in significant quantities, it would not be stored on site. It would be delivered via an new gas pipeline to the PPEC project site. The risk of a fire and/or explosion on site can be reduced to insignificant levels through adherence to applicable codes and the development and implementation of effective safety management practices. The National Fire Protection Association (NFPA) code 85A requires both the use of double-block and bleed valves for gas shut off and automated combustion controls. These measures will significantly reduce the likelihood of an explosion in gas-fired equipment. Additionally, start-up procedures would require air purging of the gas turbines prior to start up, thereby precluding the presence of an explosive mixture. The safety management plan proposed by the applicant would address the handling and use of natural gas and would significantly reduce the potential for equipment failure because of either improper maintenance or human error.

The proposed project will require a new natural gas pipeline running from an existing 36 inch diameter SDG&E transmission line. The new 12 inch diameter line will be either 8000 feet or 10,330 feet long depending on the pipeline route. Both routes are through areas of very low population density. The natural gas pipeline will be designed to comply with California Public Utilities Commission General Order 112 standards, and 49 CFR 192 standards for pipelines located in populated areas (CECP 2007a, Sections 4.4 and 5.5.4.4). CPUC General Order 112-E, Section 125.1 requires that at least 30 days prior to the construction of a new pipeline, the owner must file a report with the commission that will include a route map for the pipeline. The natural gas pipeline must be constructed and operated in accordance with the Federal Department of Transportation (DOT) regulations, Title 49, Code of Federal Regulations (CFR), Parts 190, 191, and 192 (see Table 1 LORS). Staff concludes that existing LORS are sufficient to ensure minimal risks of pipeline failure. Additionally, the gas pipeline that would be constructed for this project would be located entirely on-site, which greatly reduces the risks of impacts to the public from a rupture or failure.

Recent incidents have demonstrated significant risks associated with purging of new pipelines with natural gas. On June 28 2010 the United States Chemical Safety and Hazard Board (CSB) issued Urgent Recommendations to the United States Occupational Safety and Health Administration (OSHA), the National Fire Protection Association (NFPA), the American Society of Mechanical Engineers (ASME), and major gas turbine manufacturers to make changes to their respective regulations, codes, and guidance to require the use of inherently safer alternatives to natural gas blows for the purposes of pipe cleaning. Recommendations were also made to the fifty states to enact legislation applicable to power plants that prohibits flammable gas blows for the purposes of pipe cleaning. In accordance with those recommendations, staff proposes Condition of Certification **HAZ-8** which prohibits the use of flammable gas blow for pipe cleaning at the facility either during construction or after the start of operations.

All fuel gas pipe purging activities shall vent any gases to a safe location outdoors, away from workers and sources of ignition. Fuel gas pipe cleaning and purging shall adhere to the provisions of most current versions of the National Fuel Gas Code (NFPA 54 and 56-PS) including all Temporary Interim Amendments.

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 PPEC project. The accidental release of aqueous ammonia without proper mitigation can result in significant down-wind concentrations of ammonia gas. PPEC would store 19 percent aqueous ammonia solution in an above-ground storage tank with a maximum capacity of 20,000 gallons (PPEC 2011a). The tank will be surrounded by a secondary containment basin capable of holding the full contents of the tank plus the rainfall associated with a 24-hour 25-year storm. As required by Condition of Certification **HAZ-3**, the truck unloading area would be constructed with a sloped concrete pad that would drain into a containment area

Based on staff's analysis described above, aqueous ammonia is the only hazardous material that may pose a significant risk of off-site impact. The use of aqueous ammonia can result in the release of ammonia vapor in the event of a spill. This is a result of its moderate vapor pressure and the large amounts of aqueous ammonia that will be used and stored on site. However, the use of aqueous ammonia poses far less risk than the use of the far more hazardous anhydrous ammonia (ammonia that is not diluted with water and stored as a liquefied gas at high pressure).

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

1. the lowest concentration posing a risk of lethality, 2,000 parts per million (ppm);

2. the concentration immediately dangerous to life and health level of 300 ppm;

3. the emergency response planning guideline level 2 of 150 ppm, which is also the RMP level 1 criterion used by U.S. Environmental Protection Agency (EPA) and California; and

4. the level considered by the Energy Commission staff to be without serious adverse effects on the public for a one-time exposure of 75 ppm.

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

The applicant's revised off-site consequence analysis (OCA) (PPEC 2011a) describes the modeling parameters used for the worst-case and the alternative accidental releases of aqueous ammonia. Pursuant to the California Accidental Release Program (CalARP) regulations, the OCA was performed for the worst-case release scenario, which involved the failure and complete discharge of the storage tank, as well as an alternative release scenario involving a spill during truck unloading. Ammonia emissions from the two potential release scenarios were calculated following methods provided in the RMP off-site consequence analysis guidance, U.S. EPA, April 1999. The default meteorological data necessary for emission and dispersion calculations were supplemented by historical climate records for San Diego. A temperature of 108°F, a wind speed of 1.5 meters per second, and atmospheric stability class F were used for emission and dispersion calculations for the worst-case scenario. Potential off-site ammonia concentrations were estimated using the ALOHA air dispersion model (PPEC 2011a).

Modeling results indicate that in none of the cases modeled would ammonia concentrations exceeding 75 ppm extend to the nearest public receptor for any scenario. It should also be noted that staff believes that the analysis that was used to predict worst case impacts grossly overestimates impacts that would actual result in a worst case release.

Since the applicant's modeling is very conservative and grossly overestimates the airborne concentration of ammonia from an accidental release occur from the storage tank or during transfer operations, staff concludes that the applicant's modeling demonstrates insignificant potential for off-site impact. Staff therefore believes that the applicant's proposed engineering controls will ensure protection of public health.

Mitigation

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

Engineering Controls

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

at the PPEC project include:

- storage of containerized hazardous materials in their original containers which are designed to prevent releases and are appropriately labeled;
- 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 in order to prevent accidental mixing of incompatible materials, which could result in the evolution and release of toxic gases or fumes;
- construction of a containment area surrounding the aqueous ammonia storage tank, capable of holding the entire contents of the tank plus the volume of rainfall associated with a 24-hour 25-year storm;
- process protective systems including continuous tank level monitors with automatic alarms that are triggered at set high and low level points, automated leak detectors, temperature and pressure monitors, alarms, and emergency block valves.

Additionally, Condition of Certification **HAZ-3**, would require construction of a sloped concrete pad surrounding the aqueous ammonia truck unloading area that drains into a secondary containment structure;

Administrative Controls

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

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

- worker training regarding chemical hazards, health and safety issues, and hazard communication;
- procedures to ensure the proper use of personal protective equipment;
- safety operating procedures for the operation and maintenance of systems utilizing hazardous materials;
- fire safety and prevention; and
- emergency response actions including facility evacuation, hazardous material spill clean-up, and fire prevention.

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

The applicant will also prepare a risk management plan for aqueous ammonia, as required by both CalARP regulations and Condition of Certification **HAZ-2**. This condition also includes the requirement for a program for the prevention of accidental releases and responses to an accidental release of aqueous ammonia. A hazardous materials business plan will also be prepared by the applicant that would incorporate state requirements for the handling of hazardous materials (PPEC 2011a). Other administrative controls would be required in proposed Conditions of Certification **HAZ-1** (limitations on the use and storage of hazardous materials and their strength and volume) and **HAZ-3** (development of a safety management plan). Proposed Condition **HAZ-4** would require that the aqueous ammonia storage tank be designed to appropriate design codes.

On-Site Spill Response

In order to address the issue of spill response, the facility will prepare and implement an emergency response plan that includes information on hazardous materials contingency and emergency response procedures, spill containment and prevention systems, personnel training, spill notification, on-site spill containment, and prevention equipment and capabilities, as well as other elements as required by state law (Health and Safety Code sections 25500 to 25541) and local law regarding Hazardous Materials Business Plans (see section on **Worker Safety and Fire Protection** for a more detailed discussion of the requirements of these emergency response plans). Emergency procedures will be established which include evacuation, spill cleanup, hazard prevention, and emergency response.

The proposed facility will also rely on local emergency response in the event of an accidental release of hazardous materials or a fire emergency. The San Diego Rual Fire District (RFPD) Station 22 at 446 Alta Road will provide first response. This station is currently the first responder to the existing Otay Mesa power plant adjacent to the proposed facility. It is therefore staff's belief that this station is knowledgeable of the fire risks associated with the proposed facility as they are essentially the same as those associated with the existing facility. It is also staff's belief that they are staffed and equipped to respond to the proposed facility for the same reasons. The response time to the facility is adequate due to the close proximity of Station 22. Staff finds that the available local hazmat team is capable of responding to a hazardous materials emergency call from the PPEC project with an adequate response time. (Also see staff's section on **Worker Safety and Fire Protection** in this staff analysis.)

Transportation of Hazardous Materials

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

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

- the skill of the tanker truck driver;

- the type of vehicle used for transport; and
- accident rates.

To address this concern, staff evaluated the risk of an accidental transportation release in the project area. Staff's analysis focused on the project area after the delivery vehicle leaves the main highway. 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 will be delivered to the proposed facility in DOT-certified vehicles with design capacities of 6,500 gallons. These vehicles will be designed to DOT Code MC-307. These are high-integrity vehicles designed to haul caustic materials such as ammonia. Staff has, therefore, proposed Condition of Certification **HAZ-5** to ensure that, regardless of which vendor supplies the aqueous ammonia, delivery will be made in a tanker that meets or exceeds the specifications described by these regulations.

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

Staff used the data from the Davies and Lees (1992) article, which references both the 1990 Harwood et al. and 1993 Harwood studies, to determine that the frequency of release for the transportation of hazardous materials in the U.S. is between 0.06 and 0.19 releases per 1,000,000 miles traveled on well-designed roads and highways. The distance from the major highways State 905 or125 to the facility is about 4 miles. Staff believes that the risk of transport over this short distance in a low population area is insignificant. Data from the U.S. DOT show that the actual risk of a fatality over the past five years from all modes of hazardous material transportation (rail, air, boat, and truck) is approximately 0.1 in 1,000,000. Although it is an extremely conservative estimate in that it includes risk of accidental release from all modes of hazardous materials transportation and does not distinguish between a high-integrity steel tanker truck and other less secure modes, the results still show that the risk of a transportation accident is insignificant.

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

Based on the environmental mobility, toxicity, the quantities at the site, and frequency of delivery, it is staff's opinion that aqueous ammonia poses the predominate risk

associated with both use and hazardous materials transportation. Staff concludes that the risk associated with the transportation of other hazardous materials to the proposed project does not significantly increase the risk of that posed by ammonia transportation alone.

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, the earthquake in Kobe, Japan, in January 1995, and the recent earthquake in Japan 2010 have all heightened concerns about earthquake safety.

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

Site Security

The applicant proposes to use hazardous materials identified by the U.S. EPA as requiring the development and implementation of special site security measures to prevent unauthorized access. The U.S. EPA published a Chemical Accident Prevention Alert regarding site security (EPA 2000a), the U.S. Department of Justice published a special report entitled *Chemical Facility Vulnerability Assessment Methodology* (US DOJ 2002), the North American Electric Reliability Council published *Security Guidelines for the Electricity Sector* in 2002 (NERC 2002), and the U.S. Department of Energy (DOE) published the draft *Vulnerability Assessment Methodology for Electric Power Infrastructure* in 2002 (DOE 2002). The energy generation sector is one of 14 areas of critical infrastructure listed by the U.S. Department of Homeland Security. On April 9, 2007, the U.S Department of Homeland Security published in the Federal Register (6 CFR Part 27) an interim final rule requiring that facilities that use or store certain hazardous materials conduct vulnerability assessments and implement certain specified security measures. This rule was implemented with the publication of

Appendix A, the list of chemicals, on November 2, 2007. The rule applies to aqueous ammonia solutions of 20 percent or greater and this proposed facility plans to utilize a 30 percent aqueous ammonia solution. Staff believes that all power plants under the jurisdiction of the Energy Commission should implement a minimum level of security consistent with the guidelines listed here.

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-6** and **HAZ-7** 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 PPEC project is dependent upon the threat imposed, the likelihood of an adversarial attack, the likelihood of success in causing a catastrophic event, and the severity of the consequences of that event. The results of the off-site consequence analysis prepared as part of the RMP will be used, in part, to determine the severity of consequences of a catastrophic event.

In order to determine the level of security, the Energy Commission staff used an internal vulnerability assessment decision matrix modeled after the U.S. Department of Justice Chemical Vulnerability Assessment Methodology (July 2002), the North American Electric Reliability Council's (NERC) 2002 guidelines, the U.S. DOE VAM-CF model, and the U.S. Department of Homeland Security regulations published November 2007 in the Federal Register (Interim Final Rule 6 CFR Part 27). Staff determined that this project would fall into the category of low vulnerability. Staff, therefore, proposes that reasonable minimum security measures be implemented but does not propose that the project owner conduct its own vulnerability assessment.

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

CUMULATIVE IMPACTS AND MITIGATION

Staff analyzed the potential for the existence of cumulative impacts. A significant cumulative hazardous materials impact is defined as the simultaneous uncontrolled release of hazardous materials from multiple locations in a form (gas or liquid) that could cause a significant impact where the release of one hazardous material alone would not cause a significant impact.

Existing locations that involve the use or storage of gaseous or liquid hazardous materials and locations where such facilities might likely be built were both considered. The nearby area to the PPEC project site is comprised of other power plants and heavy industrial and commercial establishments, with some residential areas at distances beyond a half mile.

The applicant's modeling of a worst-case release of aqueous ammonia from the proposed project site predicts that significant levels of ammonia vapors would not occur at the nearest public receptors (PPEC 2011a). Therefore no cumulative impacts would be expected even if a nearby facility were to store and use hazardous materials and have an accidental release concurrent with that from the proposed PPEC project. Staff believes that while cumulative impacts are theoretically possible, they are not probable because of the many safeguards implemented to both prevent and control an uncontrolled release. The chances of one uncontrolled release occurring are remote (about one in one million per year). The chance of two or more occurring simultaneously at the PPEC project site and another facility at the same time, with resulting airborne plumes commingling to create a significant impact, are even more remote. Staff, therefore believes the cumulative risk to the public is not significantly higher than the risk posed by the proposed facility alone and the cumulative risks are also insignificant.

The applicant will develop and implement a hazardous materials handling program for the PPEC project 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 and an even lower risk of off-site impacts. Therefore, staff concludes that the facility would not contribute to a significant hazardous materials-related cumulative impact.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

No hazardous materials-related comments have been received.

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Staff concludes that construction and operation of the PPEC project would be in compliance with all applicable laws, ordinances, regulations, and standards (LORS) regarding long-term and short-term project impacts associated with use of hazardous materials at the proposed facility.

CONCLUSIONS

Staff's evaluation of the proposed project (with proposed mitigation measures) indicates that hazardous material use will pose no significant impact to the public. Staff's analysis also shows that there will be no significant cumulative impact. With adoption of the proposed conditions of certification, the proposed project will comply with all applicable LORS. In response to Health and Safety Code, section 25531 et seq., the applicant will be required to update the existing 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 County of San Diego DEH and by Energy Commission staff. In addition, staff's proposed conditions of certification requires the 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 has considered the minority population as identified in **Socioeconomics Figure 1** of the AFC in its impact analysis and has found no potential significant adverse impacts for any receptors, including environmental justice populations. Staff believes that it incorporated conservative assumptions for establishing methods for analyzing public impacts. The results of that analysis indicate that there would be no direct or cumulative significant public impact to any population in the area. Therefore, given the absence of any significant impacts, there are no disparate impacts and there is no environmental justice issues associated with hazardous materials management.

Staff recommends that the Energy Commission impose the proposed conditions of certification, presented herein, to ensure that the project is designed, constructed, and operated to comply with all applicable LORS and to protect the public from significant risk of exposure to an accidental ammonia release. If all mitigation proposed by the applicant and staff are required and implemented, the use, storage, and transportation of hazardous materials will not present a significant risk to the public.

Staff proposes eight conditions of certification mentioned throughout the text (above), and listed below. Condition of Certification **HAZ-1** ensures that no hazardous material would be used at the facility except as listed in **Appendix B** of the staff assessment, unless there is prior approval by the Energy Commission compliance project manager. Condition of Certification **HAZ-2** requires that an updated RMP be prepared and submitted prior to the delivery of aqueous ammonia.

Staff believes that an accidental release of aqueous ammonia during transfer from the delivery tanker to the storage tank is the most probable accident scenario and therefore proposes Condition of Certification **HAZ-3** requiring the development of a safety management plan for the delivery of all liquid hazardous materials, including aqueous ammonia. The development of a safety management plan addressing the delivery of all liquid hazardous materials during construction, commissioning, and operations will further reduce the risk of any accidental release not addressed by the proposed spill-prevention mitigation measures and the required RMP. This plan would additionally prevent the mixing of incompatible materials that could result in toxic vapors. Condition of Certification **HAZ-4** requires that the aqueous ammonia storage tank be designed to

applicable code specifications. The transportation of hazardous materials is addressed in Conditions of Certification **HAZ-5**. Site security during both the construction and operations phases is addressed in Conditions of Certification **HAZ-6** and **HAZ-7.** Condition **HAZ-8** addresses safety in purging new pipelines.

PROPOSED CONDITIONS OF CERTIFICATION

HAZ-1 The project owner shall not use any hazardous materials not listed in Appendix B, below, or in greater quantities or strengths than those identified by chemical name in Appendix B, below, unless approved in advance by the Compliance Project Manager (CPM).

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

HAZ-2 The project owner shall concurrently provide a new or updated Business Plan and a Risk Management Plan (RMP) prepared pursuant to the California Accidental Release Program (Cal ARP) to the County of San Diego DEH and the CPM for review. After receiving comments from the DEH and the CPM, the project owner shall reflect all recommendations in the final documents. Copies of the final Business Plan and RMP shall then be provided to the DEH for their use and to the CPM for approval.

Verification: At least thirty (30) days prior to receiving any hazardous material on the site for commissioning or operations, the project owner shall provide a copy of a final Business Plan to the CPM for approval.

At least thirty (30) days prior to delivery of aqueous ammonia to the site, the project owner shall provide the final RMP to the Certified Unified Program Agency (County of San Diego DEH) for information and to the CPM for approval.

HAZ-3 The project owner shall develop and implement a Safety Management Plan for delivery of aqueous ammonia and other liquid hazardous materials by tanker truck. The plan shall include procedures, protective equipment requirements, training, and a checklist. It shall also include a section describing all measures to be implemented to prevent mixing of incompatible hazardous materials including provisions to maintain lockout control by a power plant employee not involved in the delivery or transfer operation. This plan shall be applicable during construction, commissioning, and operation of the power plant.

Verification: At least thirty (30) days prior to the delivery of any liquid hazardous material to the facility, the project owner shall provide a Safety Management Plan as described above to the CPM for review and approval.

HAZ-4 The aqueous ammonia storage facility shall be designed to either the ASME Pressure Vessel Code and ANSI K61.6 or to API 620. In either case, the storage tank shall be protected by a secondary containment basin capable of holding 125 percent of the storage volume or the storage volume plus the volume associated with 24 hours of rain assuming the 25-year storm. The

final design drawings and specifications for the ammonia storage tank and secondary containment basins shall be submitted to the CPM.

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

HAZ-5 The project owner shall direct all vendors delivering aqueous ammonia to the site to use only tanker truck transport vehicles which meet or exceed the specifications of DOT Code MC-307. The project owner shall provide this direction in a letter to the vendor(s) at least thirty (30) days prior to the receipt of aqueous ammonia on site.

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

HAZ-6 Prior to commencing construction, a site-specific Construction Site Security Plan for the construction phase shall be prepared and made available to the CPM for review and approval. The Construction Security Plan shall include the following:

1. perimeter security consisting of fencing enclosing the construction area;
2. security guards;
3. site access control consisting of a check-in procedure or tag system for construction personnel and visitors;
4. written standard procedures for employees, contractors and vendors when encountering suspicious objects or packages on site or off site;
5. protocol for contacting law enforcement and the CPM in the event of suspicious activity or emergency; and
6. evacuation procedures.

Verification: At least thirty (30) days prior to commencing construction, the project owner shall notify the CPM that a site-specific Construction Security Plan is available for review and approval.

HAZ-7 The project owner shall also prepare a site-specific security plan (or an update to an existing security plan) for the commissioning and operational phases that will be available to the CPM for review and approval. The project owner shall implement site security measures that address physical site security and hazardous materials storage. The level of security to be implemented shall not be less than that described below (as per NERC 2002).

The Operation Security Plan shall include the following:

1. permanent full perimeter fence or wall, at least 8 feet high;

2. main entrance security gate, either hand operated or motorized;

3. evacuation procedures;

4. protocol for contacting law enforcement and the CPM in the event of suspicious activity or emergency;

5. written standard procedures for employees, contractors, and vendors when encountering suspicious objects or packages on site or off site;

6. a. a statement (refer to sample, **Attachment A**), signed by the project owner certifying that background investigations have been conducted on all project personnel. Background investigations shall be restricted to determine the accuracy of employee identity and employment history and shall be conducted in accordance with state and federal laws regarding security and privacy;

   b. a statement(s) (refer to sample, **Attachment B**), signed by the contractor or authorized representative(s) for any permanent contractors or other technical contractors (as determined by the CPM after consultation with the project owner), that are present at any time on the site to repair, maintain, investigate, or conduct any other technical duties involving critical components (as determined by the CPM after consultation with the project owner) certifying that background investigations have been conducted on contractors who visit the project site;

7. site access controls for employees, contractors, vendors, and visitors;

8. a statement(s) (refer to sample, **Attachment C**), signed by the owners or authorized representative of hazardous materials transport vendors, certifying that they have prepared and implemented security plans in compliance with 49 CFR 172.880, and that they have conducted employee background investigations in accordance with 49 CFR Part 1572, subparts A and B;

9. closed circuit TV (CCTV) monitoring system, recordable, and viewable in the power plant control room and security station (if separate from the control room) capable of viewing, at a minimum, the main entrance gate and the ammonia storage tank; and

10. additional measures to ensure adequate perimeter security consisting of either:

    a. security guard(s) present 24 hours per day, 7 days per week;

    or

    b. power plant personnel on site 24 hours per day, 7 days per week, **or** if

power plant personnel are not on-site 24 hours per day, 7 days per week, all plant alarms, intrusion detectors, and CCTV systems shall be monitored at all times from a remote location when the site is unmanned, and **all** of the following:

1. the CCTV monitoring system required in item 9, above, shall include cameras able to pan, tilt, and zoom; that have low-light capability, are recordable, and are able to view 100 percent of the perimeter fence, the ammonia storage tank, the outside entrance to the control room, and the front gate from a monitor in the power plant control room; **and**

2. perimeter breach detectors **or** on-site motion detectors.

The project owner shall fully implement the security plans and obtain CPM approval of any substantive modifications to those security plans. The CPM may authorize modifications to these measures, or may require additional measures such as protective barriers for critical power plant components—transformers, gas lines, and compressors—depending upon circumstances unique to the facility or in response to industry-related standards, security concerns, or additional guidance provided by the U.S. Department of Homeland Security, the U.S. Department of Energy, or the North American Electrical Reliability Council, after consultation with both appropriate law enforcement agencies and the applicant.

Verification: At least thirty (30) days prior to the initial receipt of hazardous materials on site, the project owner shall notify the CPM that a site-specific operations site security plan is available for review and approval.

In the annual compliance report, the project owner shall include a statement that all current project employee and appropriate contractor background investigations have been performed and that updated certification statements have been appended to the operations security plan.

In the annual compliance report, the project owner shall include a statement that the operations security plan includes all current hazardous materials transport vendor certifications for security plans and employee background investigations.

HAZ-8: 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. Exceptions to any of these provisions will be made only if no other satisfactory method is available, and then only with the approval of the CPM.

Verification: At least 30 days before any fuel gas pipe cleaning activities involving fuel gas pipe of four-inch or greater external diameter, the project owner shall submit a copy of the Fuel Gas Pipe Cleaning Work Plan 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. **Appendix A 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 10 for variation in sensitivity	30 ppm	30 minutes	Protects nearly all segments of general population from irreversible effects.
STEL[2]	NIOSH	Adult healthy male workers	35 ppm	15 minutes, 4 times per 8-hour day	No toxicity, including avoidance of irritation.
EEGL[3]	NRC	Adult healthy workers, military personnel	100 ppm	Generally less than 60 minutes	Significant irritation, but no impact on personnel in performance of emergency work; no irreversible health effects in healthy adults. Emergency conditions one-time exposure.
STPEL[4]	NRC	Most members of general population	50 ppm 75 ppm 100 ppm	60 minutes 30 minutes 10 minutes	Significant irritation, but protects nearly all segments of general population from irreversible acute or late effects. One-time accidental exposure.
TWA[2]	NIOSH	Adult healthy male workers	25 ppm	8 hours	No toxicity or irritation on continuous exposure for repeated 8-hour work shifts.
ERPG-2[5]	AIHA	Applicable only to emergency response planning for the general population (evacuation) (not intended as exposure criteria) (see preface attached)	200 ppm	60 minutes	Exposures above this level entail** unacceptable risk of irreversible effects in healthy adult members of the general population (no safety margin).

1) (EPA 1987) 2) (NIOSH 1994) 3) (NRC 1985) 4) (NRC 1972) 5) (AIHA 1989)

* The (NRC 1979), (WHO 1986), and (Henderson and Haggard 1943) all conclude that available data confirm the direct relationship to increases in effect with both increased exposure and increased exposure duration.

** The (NRC 1979) describes a study involving young animals, which suggests greater sensitivity to acute exposure in young animals. The WHO (1986) warned that the young, elderly, asthmatics, those with bronchitis, and those that exercise should also be considered at increased risk based on their demonstrated greater susceptibility to other non-specific irritants.

REFERENCES FOR HAZARDOUS MATERIALS APPENDIX A, TABLE 1

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.

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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.

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ABBREVIATIONS FOR HAZARDOUS MATERIALS APPENDIX A, TABLE 1

ACGIH, American Conference of Governmental and Industrial Hygienists
AIHA, American Industrial Hygienists Association
EEGL, Emergency Exposure Guidance Level
EPA, Environmental Protection Agency
ERPG, Emergency Response Planning Guidelines
IDLH, Immediately Dangerous to Life and Health Level
NIOSH, National Institute of Occupational Safety and Health
NRC, National Research Council
STEL, Short Term Exposure Limit
STPEL, Short Term Public Emergency Limit
TLV, Threshold Limit Value
WHO, World Health Organization

HAZARDOUS MATERIALS
Appendix B

Hazardous Materials Proposed for Use at the PPEC

LAND USE

Candace M. Hill

SUMMARY OF CONCLUSIONS

This section of the Preliminary Staff Assessment (PSA) analyzes the potential effects on land use that would occur from the construction and operation of the proposed Pio Pico Energy Center (referred to as PPEC or proposed project). Energy Commission staff concludes the proposed project would not result in the conversion of any farmland (as classified by the Farmland Mapping and Monitoring Program) to non-agricultural use or conflict with existing agricultural zoning or Williamson Act contracts; would not disrupt or divide the physical arrangement of an established community; and would not result in conversion of forest land to non-forest use. With staff's proposed Conditions of Certification **LAND-1** and **LAND-2**, the proposed project would not generate a significant impact under the California Environmental Quality Act Guidelines and would be consistent with applicable County of San Diego laws, ordinances, regulations, and standards pertaining to land use planning, and would not contribute to significant adverse cumulative land use impacts. Further, 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 by the PPEC.

INTRODUCTION

This land use analysis addresses project compatibility with existing or reasonably foreseeable[1] land uses; consistency with County of San Diego applicable laws, ordinances, regulations, and standards (LORS); and potential project related direct, indirect, and cumulative environmental effects. It also recommends conditions of certification intended to reduce or eliminate impacts associated with any potentially significant environmental effects. In addition to the effects associated with land use, a power plant and its related facilities have the potential to create environmental impacts in the areas include air quality, biological and cultural resources, noise and vibration, hazardous materials management, public health, traffic and transportation, and visual resources. These individual resource areas are discussed in detail in separate sections of this document.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Land Use Table 1 lists the local land use LORS applicable to the proposed project. The proposed project's consistency with these LORS is analyzed under **Assessment of Impacts and Discussion of Mitigation** and in **Land Use Table 2**.

The project site does not involve federally managed lands, therefore, there are no identified applicable federal land use related LORS and no applicable state land use

[1]Whether a project is reasonably foreseeable (i.e., a "probable future project") for purposes of cumulative impact analysis depends on the nature of the resource in question, the location of the project, and the type of project. (14 California Code of Regulations, Section 15130(b)(2).

LORS have been identified.

In addition, the project site is located approximately three miles east of Brown Field Municipal Airport and outside of the Airport Influence Area Review Area 2[2]. Therefore, the Brown Field Municipal Airport Land Use Compatiblity Plan does not apply to the project.

Land Use Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable LORS	Description
Federal	
	None
State	
	None
Local	
County of San Diego General Plan	The County of San Diego General Plan, adopted August 3, 2011, consists of six elements: Land Use Element, Mobility Element, Conservation and Open Space Element, Housing Element, Safety Element and Noise Element. The General Plan also includes community plans and specific plans. The proposed project site is located within the East Otay Mesa Business Park Specific Plan which implements the policies and regulations of the County of San Diego General Plan and the Otay Subregional Plan.
Otay Subregional Plan	The Otay Subregional Plan, adopted August 3, 2011, is intended to promote orderly development, protect environmental and manmade resources, and implement the County of San Diego's objectives for growth management and the structure of government for the Otay Subregion.
East Otay Mesa Business Park Specific Plan	The East Otay Mesa Business Park Specific Plan (as amended by SPA 10-001, September 15, 2010) sets forth a comprehensive vision for the Specific Planning Area in the unincorporated areas of the County of San Diego. The Specific Plan is a regulatory document that establishes standards for development, environmental conservation, and public facilities and implements the objectives, goals and policies of the County of San Diego General Plan and the Otay Mesa Subregional Plan.
Heavy Industrial Designation	The Heavy Industrial land use designation within the East Otay Mesa Business Park Specific Plan, allows for most uses in the Technology Business Park designation and the Light Industrial designation. In addition, recycling plants, salvage yards and outdoor storage are also permitted.

[2] Airport Influence Area is defined as "The area which current or future airport-related noise, overflight, safety, or airspace protection factors may significantly affect land uses or necessitate restrictions on those uses." Review Area 2 consists of locations beyond Review Area 1 but within the airspace protection and/or overflight notification areas depicted on Exhibits III-3 and III-4 in the Brown Field Municipal Airport Land Use Compatibility Plan. Limits on the heights of structures, particularly in areas of high terrain, are the only restrictions on land uses within Review Area 2. The recordation of overflight notification documents is also required in locations within Review Area 2.

County of San Diego Zoning Ordinance	The Zoning Ordinance establishes zones in the unincorporated areas of the County of San Diego regulating the use of land, height of buildings, area of lots, building site and providing for maps showing the zoning classification boundaries.
Specific Planning Zoning (S88)	The Specific Planning Area Use Regulations are intended to accommodate Specific Plan areas shown on the County of San Diego General Plan or on those lands for which a Specific Plan has been adopted by the Board of Supervisors. The application of the S88 Use Regulations can create an unlimited variety of land uses in conformance with the General Plan.
Major Impact Services and Utilities Use, Section 1350	The Major Impact Services and Utilities use type refers to public or private services and utilities which have substantial impact. Such uses may be conditionally permitted in any zone when the public interest supersedes the usual limitations placed on land use and transcends the usual restraints of zoning for reasons of necessary location and community wide interest. Major Impact Services and Utilities uses are permitted in the Heavy Industrial land use designation of the East Otay Mesa Business Park Specific Plan upon the issuance of a Major Use Permit from the County of San Diego.

SETTING

PROJECT SITE

The PPEC is proposed to be located in an unincorporated area of southwestern County of San Diego, known as Otay Mesa. The PPEC is located approximately one mile north of State Route 11, two miles east of Highway 125, approximately two miles southeast of the city of Chula Vista and one and one-half miles north of the United States/Mexican border.

The project site is located immediately west of the existing Otay Mesa Generating Project (OMGP) a natural gas-fired power plant.[3] The PPEC would be located on a vacant, disturbed 9.99-acre parcel (Assessor Parcel Number 648-040-45) at the southeast corner of Alta Road and Calzada de la Fuente intersection, within an industrial park. The 9.9 acre generating facility would be fenced and would include an administration and control area, a warehouse, a water treatment building, a firewater pump modular enclosure, switchgear modules, and gas compressor modulars. Refer to the Site Arrangement- Revised Figure 3.1-3A for the proposed facility layout (PPEC 2011s). The construction laydown area, 6 acres of a 9.68-acre parcel (Assessor Parcel Number 648-040-46), would be located immediately south and adjacent of the proposed project site. Both the proposed project site and the adjacent construction laydown area have been cleared and graded for project development. The project site is served by

[3]The OMGP is a 590MW natural gas-fired power facility that began operation in 2009. The plant includes two combustion generators, heat recovery steam generators, air cooled condensers and steam turbine generators. In addition, the plant includes a 230kV switchyard with a 0.1-mile connection to the existing 230kV Miguel-Tijuana line located to the east.

paved streets, water and other utilities. The property address is 7363 Calzada de la Fuente.

The access to the PPEC site would be from Calzada de la Fuente, west of the OMGP. An emergency entrance would be accessible via a separate access point from Alta Road before the intersection of Alta Road and Calzada De La Fuente. The construction laydown area would also be accessed from either Alta Road or Paseo de la Fuente.

Under the East Otay Business Park Specific Plan, land in the vicinity of the proposed project is designated for heavy industrial, mixed industrial, light industrial, district commercial, technology business park, conservation, and rural residential uses. The industrial designations represent the majority of acreage within the project area. Refer to **Land Use Figure 2**, which depicts the project site and surrounding designations.

Transmission Lines

An outgoing 230kV generation tie line would be constructed using either the applicant-proposed Transmission Line Route A or Transmission Line Route B to connect the plant to the existing San Diego Gas and Electric (SDG&E) Otay Mesa switchyard located approximately 1,800 feet east of the plant site. The power line would be owned and maintained by the applicant. Both routes are located within the East Otay Mesa Business Park Specific Plan and would be adjacent to the heavy industrial land use designation.

Transmission Line Route A would begin as an overhead power line along the north side of Calzada de la Fuente, extend approximately 1,700 feet east where it would then be routed underground for approximately 400 feet into the Otay Mesa switchyard (total length of Route A would be approximately 2,100 feet).

Transmission Line Route B would begin as an overhead power line from the eastern edge of the proposed project site, would then run south for approximately 550 feet, then turn east along the northern border of two parcels directly south of the OMGP site for approximately 1,400 feet, and then turn north for approximately 700 feet into the Otay Mesa switchyard (total length of Route B would be approximately 2,650 feet).

Natural Gas Pipeline

There are two possible routes for the gas supply pipeline. Both routes would connect to an existing SDG&E natural gas pipeline, but at different locations. As currently proposed, Route A extends approximately 2,375 feet south along Alta Road then turns west on Otay Mesa Road for approximately 2,700 feet, and then turns south on Enrico Fermi Drive for approximately 2,700 feet to Airway Road, at which point it would connect to an existing SDG&E natural gas pipeline. The gas line Route A would be within the East Otay Mesa Business Park Specific Plan, adjacent to heavy industrial, technology business park, light industrial, district commercial and state route right-of-way (for the future State Route 11) land use designations.

Route B would extend approximately 2,375 feet south along Alta Road, turn west on Otay Mesa Road, and continue approximately 7,920 feet to Harvest Road at which point

it would connect to the existing SDG&E natural gas pipeline for a total of approximately 10,300 feet. The pipeline would be constructed, owned, and operated by SDG&E. The natural gas pipeline would be installed within the right-of-way of the local roadways. The gas line Route B would be located within the East Otay Mesa Business Park Specific Plan and would be adjacent to heavy industrial, district commercial, technology business park and commercial overlay land use designations. In addition, approximately 2,400 feet of the route would be adjacent to land within the City of San Diego designated as industrial employment.

SURROUNDING AREA

The unincorporated portion of the County of San Diego encompasses approximately 2.3 million acres acres (CSD 2011a). Within that that acreage, the East Otay Mesa Business Park Specific Plan contains approximately 3,013 acres of land with the industrial land use designations representing the majority of the acreage surrounding the project area. Existing land uses immediately adjacent to, and nearby, the proposed PPEC project site include:

- North: The Richard J. Donovan Correctional Facility is located approximately 4,000 feet northwest and a County of San Diego Correctional Facility that includes the George F. Bailey Detention Facility, the East Mesa Detention Facility, the Federal Immigration Detention Facility, and the County of San Diego Juvenile Detention Facility is located approximately 4,800 feet north; the San Diego National Wildlife Refuge; a single residence converted to a restaurant (Kuebler Ranch) known as Alta Café or Alta Latin Grille; and an unpermitted community of mobile homes located approximately 1.5 miles northwest.
- South: United States/Mexico border; vacant land; auto auction at the southwest corner of Otay Mesa Road and Alta Road; three single-family residences located approximately 4,700 feet southwest of PPEC along Otay Mesa Road; Tijuana's Rodriquez International Airport.
- East: Otay Mesa Generating Project; San Diego National Wildlife Refuge; vacant land.
- West: Brown Field approximately three miles; San Diego National Wildlife Refuge.

Land Use Figure 1 in this document shows the existing land uses surrounding the project site.

GENERAL PLAN LAND USE – OTAY SUBREGIONAL PLAN, EAST OTAY MESA BUSINESS PARK SPECIFIC PLAN AND ZONING DESIGNATIONS

The County of San Diego General Plan, adopted August 3, 2011, includes the Otay Subregional Plan, which was adopted as part of its Land Use Element. The General Plan and Subregional Plan identify the land use designation of the project site and surrounding area as Specific Plan Area (**Land Use Figure 3**). This designation is applied to areas where a Specific Plan was adopted by the county prior to the adoption of the General Plan. Specific Plans may contain residential, commercial, industrial,

public, institutional, and/or open space uses, and detailed land use regulations are contained within each adopted Specific Plan document.

The proposed PPEC project is located within the East Otay Mesa Business Park Specific Plan which implements the goals, policies and regulations of the County of San Diego General Plan and the Otay Subregional Plan.

OTAY SUBREGIONAL PLAN - COUNTY OF SAN DIEGO GENERAL PLAN

The Otay Subregional Plan[4] (OSRP) contains approximately 28,380 acres and is located in the most southwesterly corner of the unincorporated county, bordered by the Jamul/Dulzura subregion to the north and east, the city of Chula Vista to the west, and the international border with Mexico to the south. The OSRP contains goals and policies for the two specific plan areas within the OSRP: the East Otay Mesa Business Park Specific Plan and the Otay Ranch (CSD 2011b).

PROJECT SITE LAND USE DESIGNATION AND ZONING - EAST OTAY MESA BUSINESS PARK SPECIFIC PLAN

Heavy Industrial Designation

The East Otay Mesa Business Park Specific Plan[5] (SP) includes a land use plan for the area identifying land use designations within the boundaries of the SP area.
The SP sets forth a comprehensive vision for the Planning Area, which contains approximately 3,013 areas of land with 2,110 acres planned as a modern industrial and business center, 552 acres set aside for conservation or very low-density residential use and 350 acres as circulation corridors (CSD 2010). The project site and laydown area fall within the “Heavy Industrial” land use designation of the SP (**Land Use Figure 2**). The Heavy Industrial zone allows for the development of manufacturing operations and most uses allowed in the Technology Business Park and Light Industrial land use designations of the SP, but also allows for more intense industrial uses such as recycling plants, salvage yards, and outdoor storage.

Specific Planning Zoning

Zoning for the project site is Specific Plan (S88), which is intended to accommodate Specific Plan areas as provided in the County of San Diego General Plan. The Specific Plan zoning designation allows for an unlimited variety of land uses, as further established through an adopted Specific Plan document. As established by the County of San Diego Zoning Ordinance (§ 2888(c), all uses established pursuant to an

[4] Adopted May 18, 1983 – GPA 83-01; Amended July 27, 1994, GPA 94-02; and adopted August 3, 2011 with the adoption of the August 3, 2011 General Plan.

[5] As amended by SP 10-001, September 15, 2010. Specific Plan 93-004 created the East Otay Mesa Specific Plan Area and was approved by the Board of Supervisors on July 27, 1994. There have been seven amendments to the SP. The first amendment to the SP (SPA 98-002) was approved by the Board of Supervisors on January 13, 1999 and the seventh amendment (SPA 10-001) was approved by the Board of Supervisors on September 15, 2010 which recombined Subarea 1 and Subarea 2, modified the Specific Plan boundary in response to a voter initiative, and made minor revisions to the Circulation Plan, Land Use Plan and regulatory provisions.

applicable Specific Plan shall be subject to all of the conditions and restrictions set forth in the Specific Plan, and these Specific Plan conditions and restrictions concerning uses shall prevail over the Zoning Ordinance regulations to the extent of any conflict between them.

The County of San Diego Zoning Ordinance classifies uses into certain use types. A power plant is considered a Civic Use type (§ 1300) and classified as a Major Impact Services and Utilities use (§ 1350). Civic Use types include the performance of utility, educational, recreational, cultural, medical, protective, government, and other uses which are strongly vested with public or social importance.

The Major Impact Services and Utilities use type refers to public or private services and utilities which have substantial impact. Such uses may be conditionally permitted in any zone when the public interest supersedes the usual limitations placed on land use and transcends the usual restraints of zoning for reasons of necessary location and community wide interest (CSD 1978). Major Impact Services and Utilities are permitted in the Heavy Industrial land use designation of the SP upon the issuance of a Major Use Permit and the required findings (§2565 and §7358) from the County of San Diego (CSD 2010, Table 3.1-1). The analysis of the conformance with the Major Use Permit findings is discussed in the section **County of San Diego Zoning Ordinance Section 7358 – Major Use Permit Findings.**

East Otay Mesa Business Park Specific Plan Regulatory Provisions

The SP includes a chapter which sets forth the policies, regulatory procedures and standards for implementing the SP. This includes land use regulations and development standards, such as building setbacks and height restrictions, required parking standards, and landscaping requirements. Regulatory provisions also include applicable development review and approval procedures for projects proposed within the limits of the SP.

County of San Diego Zoning Ordinance

Development standards and regulations not expressly identified in the SP are subject to the County of San Diego Zoning Ordinance. All uses in the Specific Plan area shall comply with applicable portions of the County of San Diego Zoning Ordinance: Performance Standards (§ 6300 et. seq). Regarding noise measurements, uses in the Heavy Industrial areas shall comply with the Noise Limits (§ 6310).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Energy Commission staff has analyzed the information provided in the AFC and has acquired information from other sources to determine consistency of the proposed PPEC project with applicable land use LORS and the proposed project's potential to have significant adverse land use-related impacts. In addition, conditions of certification developed by staff to reduce any potential impacts to a less than significant level are provided.

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

Significance criteria used in this document are based on Appendix G of the California Environmental Quality Act (CEQA) guidelines (CCR 2006) and performance standards or thresholds identified by Energy Commission staff, as well as applicable LORS utilized by other governmental regulatory agencies.

An impact may be considered significant if the proposed project results in:

- Conversion of Farmland or Forest Land.
  - Conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide or Local Importance (Farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.[6]
  - 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)).
  - Result in the loss of forest land or conversion of forest land to non-forest use.
  - Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use[7] 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.
- 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.[8]

[6] 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.

[7] 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.

[8] Cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects and can result from individually minor, but collectively significant actions taking place over a period of time (CEQA Guidelines §15355; 40 CFR 1508.7)

In general, a power plant and its related facilities may also be incompatible with existing or planned land uses, resulting in potentially significant impacts, if they create unmitigated noise, dust, or a public health or safety hazard or nuisance; result in adverse traffic or visual impacts; or preclude, interfere with, or unduly restrict existing or future uses. Refer to other sections of this document for a detailed discussion of any additional potential project-related impacts and recommended mitigation and conditions of certification.

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 Department of Conservation Farmland Mapping and Monitoring Program (FMMP) produces *Important Farmland Maps* and statistical data used for analyzing impacts on California's agricultural resources. The FMMP is required to prepare, update, and maintain *Important Farmland Series Maps* and other soils and land capability information. The *Important Farmland Maps* depict categories of Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, Grazing Land, Urban and Built-up Land, Other Land and Water. The FMMP designates the proposed PPEC project site and the construction laydown area as "Other Land" which is defined as land not included in any other mapping category (CDOC 2008).

The proposed PPEC project 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. Therefore, the proposed PPEC project 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 or laydown area. The proposed PPEC project is not located within an area 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 or laydown area are 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 PPEC project and laydown area would be located in an industrial area of unincorporated San Diego County. The power plant and laydown area would be located entirely on private property, on a 9.99-acre site. The nearest dwellings in the vicinity of PPEC include three single-family residences located approximately 4,700 feet southwest on Otay Mesa Road and a mobile-home community located approximately 7,900 feet northwest.

The three single family residences are not located within any established residential community or development, and there would be no relocation of these residences as a result of PPEC. The PPEC would be located entirely within an area designated for industrial development and would be located adjacent to an industrial use. Therefore, the PPEC project would not physically divide or disrupt any community within the East Otay Mesa area. 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.

The project‘s linear facilities would not present new physical barriers. The two proposed transmission lines would originate from the PPEC property. Route A would traverse across the northern boundardy of the OMGP site and Route B would traverse across the northern border of two parcels directly south of the OMGP site and would be both overhead and underground power lines.

CONFLICT WITH ANY APPLICABLE HABITAT OR NATURAL COMMUNITY CONSERVATION PLAN

The PPEC project is located within the County of San Diego Multiple Species Conservation Program (MSCP) Subarea Plan adopted October 22, 1997. The MSCP is a comprehensive, long term habitat conservation plan which addresses the needs of multiple species and the preservation of natural vegetation communities in County of San Diego. The MSCP addresses the potential impacts of urban growth, natural habitat loss and species endangerment and creates a plan to mitigate for the potential loss of covered species and their habitat due to the direct impacts of future development of both public and private lands within the MSCP area. The total study area encompasses 12 jurisdictions and consists of 582,243 acres, of which 43 % (252,132 acres) is in unincorporated areas under the jurisdiction of the county of San Diego (CSD1997). The MSCP is a subregional plan under the Natural Communities Conservation Program and is implemented through local subarea plans. The County’s Subarea Plan covers 85 covered species and is divided into three segments: Lake Hodges, Metropolitan-Lakeside-Jamul, and South County. PPEC is located within the South County Subarea Plan.

The PPEC falls within a Minor Amendment Area (CSD 2010 Figure 1.2-1). Processing a Minor Amendment to allow development within areas identified on the MSCP requires

preparation of a CEQA document, a biological resources report, identification of any mitigation required by the Biological Mitigation Ordinance (BMO), and concurrence by the local offices of the United States Fish and Wildlife Service and California Department of Fish and Game (CSD 2010). The **Biological Resources** section of this PSA concludes that the Minor Amendment was completed and provides a detailed discussion of the Minor Amendment history, project impacts to biological resources and proposed conditions of certification.

CONFLICT WITH ANY APPLICABLE LAND USE PLAN, POLICY OR REGULATION

Energy Commission staff evaluates (Cal. Code Regs. Tit. 20, § 1744) the information provided by the project owner in the AFC (and any amendments), project design, site location, and operational components to determine if elements of the proposed project would conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project, or that would normally have jurisdiction over the project except for the Energy Commission's exclusive authority. As part of the licensing process, the Energy Commission must determine whether a proposed facility complies with all applicable state, regional, and local LORS (Pub. Resources Code § 25523[d][1]). The Energy Commission must either find that a project conforms to all applicable LORS or make specific findings that a project's approval is justified even where the project is not in conformity with all applicable LORS (Pub. Resources Code § 25525). When determining LORS compliance, staff is permitted to rely on a local agency's assessment of whether a proposed project is consistent with that agency's zoning and general plan. On past projects, staff has requested that the local agency provide a discussion of the findings and conditions that the agency would make when determining whether a proposed project would comply with the agency's LORS, were they the permitting authority. Any conditions recommended by an agency are considered by Energy Commission staff for inclusion in the proposed conditions of certification for the project.

As part of staff's analysis of local LORS compliance and to determine the county's view of the project's consistency with its general plan and zoning code, staff sent a letter to the County of San Diego on March 10, 2011 (CSD 2011c) detailing the potential LORS compliance issues associated with the proposed PPEC project and requested that the county provide its position on the proposed project's consistency with its general plan, zoning ordinance, and other applicable LORS (CSD 2011c). As of this writing, the County of San Diego Department of Planning and Land Use has not responded to the March 10, 2011 letter.

Based on staff's independent review and analysis of the AFC and the local land use LORS, staff concludes that the following policies in the Otay Subregional Plan, East Otay Mesa Business Park Specific Plan, and the County of San Diego Zoning Ordinance are applicable to the proposed PPEC project.

Otay Subregional Plan - County of San Diego General Plan

Chapter II – Land Use Policy #3 Develop Industrial Design Criteria requires all proposed industrial development to comply with the design criteria in the County of San Diego Zoning Ordinance M56 Mixed Industrial Use Regulations based on the following:

(A) The area proposed for industrial development is located near the international border.

(B) Maintaining a certain quality and cohesiveness of development will make the area more attractive and marketable, and

(C) Efforts will be made to achieve acceptable design standards without unreasonable cost.

The County of San Diego Zoning Ordinance, Manufacturing and Industrial Use Regulations (§ 2500) contains five classifications: M50 Basic Industrial; M52 Limited Impact Industrial; M54 General Impact Industrial; M56 Mixed Industrial; and M58 High Impact Industrial. The M56 Mixed Industrial Use Regulations (§2560) are generally applied to large areas of 100 acres or more such as areas designated as "specific plans" where a unified appearance can be created through the implementation of development standards adopted for the particular specific plan. The types of uses in the M56 Use Regulations would include industrial plants that are primarily engaged in the manufacturing, compounding, processing, assembling, packaging, treatment, warehousing or fabrication of materials or products, and commercial types necessary to support those uses.

In the case of PPEC, the applicable "specific plan" would be the East Otay Mesa Business Park Specific Plan (SP). The SP has adopted development standards pursuant to the M56 Regulations and the proposed PPEC would be subject to the SP development standards. Staff's analysis of these development standards is contained in the section **East Otay Mesa Business Park Specific Plan Development Standards.**

Staff's analysis shows that the PPEC would be consistent with the site planning standards. In addition, staff also concludes with the adoption of Conditions of Certification **LAND-1, LAND-2 and VIS-2, VIS-3** and **VIS-5** in the **Visual Resources** section of this document the project would comply with the development standards.

In addition to requiring that a project comply with the development standards in the East Otay Mesa Business Park Specific Plan Development Standards, the M56 Mixed Industrial Use Regulations indicate certain uses by right and those permitted upon approval by the County of San Diego Planning Commission.

Major Impact Services and Utilities uses, such as PPEC, are permitted in the M56 Use Regulations in the industrially designated areas upon the issuance of a Major Use Permit[9]. Staff has reviewed the findings in regard to the PPEC and concludes that the

[9] The County of San Diego defines Use Permit as " A permit which may be granted by the appropriate San Diego County authority (Major Use Permit under the original jurisdiction of the Planning Commission) to provide for the accommodation of land uses with special site or design requirements, operation characteristics, or potential adverse effects on surroundings, which are not permitted as of right but which may be approved upon completion of a review process and, where necessary, the imposition of special conditions of approval by the permit granting authority."

findings for the Major Use Permit can be made. Please refer to the discussion under the section **County of San Diego Zoning Ordinance Section 7358 – Major Use Permit Findings.**

East Otay Mesa Business Park Specific Plan Development Standards

This section discusses the applicable development standards for PPEC.

Building Type: The "W" designation allows non-residential buildings either attached or detached on the same lot or on a separate lot. The proposed plant buildings would include an administration and control area, a warehouse area, a water treatment building, a firewater pump modular enclosure, switchgear modules, and gas compressor modulars (PPEC 2011s). The proposed PPEC project would be consistent with this standard.

Minimum Lot Size: The minimum lot size is 30,000 square feet. The PPEC project would be located on a 9.99-acre parcel which is approximately 435,600 square feet and exceeds the minimum lot size. Staff concludes for this reason the project would be consistent with this standard.

Floor Area Ratio[10]: The zoning allows a 0.5 floor area ratio. The PPEC project proposes a 2,600 square foot control/administration building and a 2,400 square foot warehouse for a total of 5,000 square feet. The PPEC proposes only single floor structures that would cover less than 0.01 of the site.[11] The project would be consistent with this development standard since the standard establishes the maximum level of development intensity which the project does not exceed.

Maximum Building Height: The maximum building height is 60 feet. Project features that exceed this limit are the stacks for the three combustion turbines at 100 feet. However, the county does not consider the stacks as "buildings" (CEC 2012d). The County of San Diego Zoning Code defines buildings as "Any structure used or intended for supporting or sheltering any use or occupancy" (CSD 1978). Staff concludes for this reason the project would comply with the maximum building height standard.

Maximum Building Coverage[12]: The coverage designator is 0.5. Based on the preliminary project design, the PPEC would contain approximately 23,050 square feet of covered and enclosed building area (PPEC 2011s). The building coverage, based on the 23,050 square feet would be 0.05[13].

[10] Floor Area Ratio is defined by the County of San Diego Zoning Ordinance as "The numerical value obtained by dividing the gross floor area of a building or buildings located upon a lot or building site by the net site area of such lot or building site."

[11] 5,000 square feet (control building and warehouse)/435,600 square feet (lot size) = 0.011.

[12] Lot coverage is defined by the County of San Diego Zoning Ordinance as " The percentage of net site area covered by the vertical projection of any structure excluding any structure not extending above grade."

[13] 23,050 square feet (footprint)/435,600 square feet (lot size) = 0.052.

The building coverage development standard (also referred to as lot coverage) establishes the maximum percentage of lot surface that may be covered by buildings which differs from floor area ratio which establishes the maximum building intensity permitted on the project site.

The project would be consistent with this development standard since the standard establishes the maximum level of development intensity which the project does not exceed.

Setbacks: The two roads that would abut the PPEC are Alta Road and Calzada de la Funete. Alta Road is classified as a four-lane Industrial/Commercial Collector Road and Calzada de la Fuente is classified as a two-lane Industrial/Commercial Collector Road within the SP. The minimum building setback for a 4-lane road is 20 feet and the minimum building setback for a two-lane road is 10 feet (CEC 2012e).

The conceptual landscaping plan (PPEC 2011d-Figure 5.13-18) depicts a 30-foot building setback encompassing the entire project site. The 30-foot building setback as proposed would exceed the minimum setback. Staff concludes for this reason the project would be consistent with this standard.

Parking: The SP requires development projects to provide adequate off-street parking for all parking needs, such as for employees, visitors and suppliers.

The SP requires 2.5 parking spaces (per 1,000 square feet) up to 100,000 gross square feet plus 1 space for each vehicle used in conjunction with the use. In addition, 1 bicycle space for every 10 parking spaces is required. The PPEC project proposes a 2,600 square foot control/administration building and a 2,400 square foot warehouse for a total of 5,000 square feet. Therefore, the minimum number of parking spaces would be eleven parking spaces plus one for a total of 12 parking spaces[14] (CEC 2012g). The PPEC project proposes seven spaces and a one handicap space (PPEC 2011a -Site Arrangement- Figure 3.1-3A). The operational parking as proposed would not meet the minimum requirements for the SP. Therefore, staff proposes Condition of Certification **LAND-1** which would render the project consistent with this standard.

Service Areas: Public Utility Structures: Requires traffic signal boxes, transformers, telephone switching boxes and other public utility structures to be located underground or appropriately screened, with landscape or architectural treatment. With the inclusion of Condition of Certification **VIS-2** (Landscape Improvements, Permanent Fencing and Screening) the project would be consistent with this standard.

Fencing, Walls and Hedges: The SP requires all open sales, display and storage areas not otherwise fully screened by topography, buildings, or mature landscaping to be enclosed by a view-obscuring fence or wall not less than six feet high. Noise walls may be higher than six feet when additional height is needed to comply with the General Plan Noise Element or Noise Ordinance requirements. Within the setback area, fences, walls and hedges shall have a maximum height of six feet above grade. With the inclusion of Condition of Certification **VIS-2** (Landscape Improvements, Permanent

[14] 5,000/1,000 = 2x2.5 = 11 parking spaces.

Fencing and Screening) the project would be consistent with this standard.

Lighting: The SP requires all lighting comply with the County Light Pollution Code (County Code Section 59.101 et seq). Building illumination and architectural lighting shall be indirect in character (no light source visible). For service and loading areas, lighting shall include directional shields and shall not overflow from the service areas into adjoining parcels. With the inclusion of Conditions of Certification **VIS-3** (Permanent Exterior Lighting) and **VIS-5** (Construction Lighting) the project would be consistent with this standard.

Signage: The applicant has not proposed signs for the PPEC project. However, if signs are proposed, the SP requires development projects to comply with the On-Premise Sign Regulations (§§6250-6299). These regulations would impose a reasonable level of sign standards and controls in order that the public convenience may be properly served and enhanced through the regulations of such elements as the number, size, height and location of signs. Staff proposes Condition of Certification **LAND-2** in the event a sign is proposed which would then render the project consistent with this standard.

County Of San Diego Zoning Ordinance Section 7358 – Major Use Permit Findings

The County of San Diego Zoning Code classifies a power plant as a Major Impact Services and Utilities Use which is a permitted use upon the issuance of a Major Use Permit. Because the issuance of a certificate by the Energy Commission is in lieu of any local permit (Pub. Resources Code § 25500) the proposed PPEC would not require the county to issue a Major Use Permit. However, to determine LORS conformance, Energy Commission staff concludes the project would be consistent with the following six findings for a Major Use Permit as required by County of San Diego Zoning Ordinance Section 7358:

(A) That the location, size, design, and operating characteristics of the proposed use will be compatible with adjacent uses, residents, buildings, or structures, with consideration given to:

1. Harmony in scale, bulk, coverage and density;

   The industrial appearance of the project would fit the character of the surrounding industrial uses. The PPEC would be located entirely within an area both designated for heavy industrial development and located adjacent to an existing industrial use, the Otay Mesa Generating Project. The proposed PPEC meets the SP development standards as discussed above for coverage and density.

   The project owner shall design, construct, and inspect the project in accordance with the 2010 California Building Standards Code (CBSC), also referenced as Title 24, California Code of Regulations. Refer to the **Facility Design** section for a detailed discussion of the required regulations to ensure that the project would be built to applicable engineering codes and ensure public health and safety.

2. The availability of public facilities, services and utilities;

   Public facilities, services and utilities would be available to the project. The PPEC would make a connection to the Otay Water District potable water system, either at an existing 12-inch main along Calzada de la Fuente, or at an existing 24-inch main along Alta Road. This connection would supply facility drinking water, showers, sinks, toilets, eye wash stations, and safety showers and the primary source of fire protection water.

   For sewer services, a connection would be made to an existing 12-inch sewer main along Calzada de la Fuente along the north project site boundary or to an existing 15-inch sewer main along Alta Road, along the west side of the boundary.

   An outgoing 230kV generation tie line would be constructed using either the applicant-proposed Transmission Line Route A or Transmission Line Route B to connect the plant to the existing San Diego Gas and Electric (SDG&E) Otay Mesa switchyard located approximately 1,800 feet east of the plant site. The power line would be owned and maintained by the applicant.

   There are two possible routes for the gas supply pipeline. Both routes would connect to an existing SDG&E natural gas pipeline, but at different locations. Route A extends approximately 2,375 feet south along Alta Road, then turns west on Otay Mesa Road for approximately 2,700 feet, and then turns south on Enrico Fermi Drive for approximately 2,700 feet to Airway Road, at which point it would connect to an existing SDG&E natural gas pipeline.

   Route B would extend approximately 2,375 feet south along Alta Road, turn west on Otay Mesa Road, and continue approximately 7,920 feet to Harvest Road at which point it would connect to the existing SDG&E natural gas pipeline for a total of approximately 10,300 feet. The pipeline would be constructed, owned, and operated by SDG&E. The natural gas pipeline would be installed within the right-of-way of the local roadways.

3. The harmful effect, if any, upon desirable neighborhood character;

   The proposed PPEC and laydown area would be located in an industrial area of unincorporated San Diego County. The nearest dwellings in the vicinity of PPEC include three single-family residences located approximately 4,700 feet southwest on Otay Mesa Road and a mobile-home community located approximately 7,900 feet northwest. Based on the limited development and the project's consistency with the SP Site Planning Standards there would not be a harmful effect upon the desirable neighborhood character given the industrial nature and designation of the area.

   Although there is not an existing or planned neighborhood/residential community located near the PPEC, the construction and operation of any power plant creates noise or unwanted sound that must be mitigated. With the implementation of Condition of Certification **NOISE-6** (Construction Restrictions),

which restricts the construction actives from 7:00am – 7:00pm, Monday through Saturday, the project would produce no significant adverse noise impacts on the three-single family residences within the affected area, directly, indirectly, or cumulatively.

In addition, Condition of Certification **NOISE-4** (Noise Restrictions) would require implementation of noise mitigation measures to ensure that the operation of the PPEC would not cause the noise levels (during the four quietest consecutive hours of the nighttime) to exceed an acceptable average decibel for the single family dwellings and the mobile home park. Refer to the **Noise and Vibration** section for a detailed discussion of noise impacts and additional conditions of certification.

Further, Public Health staff concludes there would not be significant adverse cancer or short- or long-term noncancer health effects from the project's toxic emissions. Refer to the **Public Health** section for a detailed discussion regarding long-term and short-term project impacts in the area.

4. The generation of traffic and the capacity and physical character of surrounding streets;

   The Traffic and Transportation section of this document provides a detailed discussion of all project-related traffic issues. Staff concludes that with the implementation of the proposed Conditions of Certification **TRANS-1** through **TRANS-9** the project would not result in significant traffic and transportation impacts. The project would generate minimal traffic during operation.

5. The suitability of the site for the type and intensity of use or development which is proposed;

   The intent of the East Otay Mesa Business Park Specific Plan is to promote development of the area into a comprehensive industrial and business district. The project site is designated for Heavy Industrial uses and is adjacent to an existing power plant, the Otay Mesa Generating Project.

6. Any other relevant impact of the proposed use; and

   (B) That the impacts, as described in paragraph "A" of this section, and the location of the proposed use will be consistent with the County of San Diego General Plan.

   The location, size, design, and operating characteristics of the proposed PPEC use would be compatible with adjacent uses, residences, buildings, or structures. The proposed PPEC project and laydown area would be located in an area designated for and adjacent to industrial development. The proposed PPEC meets the SP development standards and would be compatible with the adjacent uses.

(C) That the requirements of the California Environmental Quality Act have been complied with.

The applicant is seeking approval through the California Energy Commission's Application for Certification (AFC) process to construct and operate a power plant. The California Energy Commission's power plant licensing process is certified by the California Resources Agency as "functionally-equivalent" to the California Environmental Quality Act (CEQA) process. Therefore, once the PPEC project is certified, the requirements of the California Environmental Quality Act have been complied with and the PPEC would be consistent with Section 7358 of the County of San Diego Zoning Ordinance.

Transmission Lines and Gas Pipelines

Electric transmission lines and gas pipelines are classified as "Essential Services" by the County of San Diego Zoning Ordinance (§1335). The Essential Service type is defined as "services which are necessary to support principal development and involve only minor structures, such as utility lines and/or poles, which are necessary to support principal development. Essential Services also includes a public passive park/recreational area". (CSD 1978).

The "Essential Services" are permitted in the heavy industrial, light industrial, technology business park, district commercial and commercial overlay land use designations of the SP (CSD 2010, Table 3.1-1).

The City of San Diego Zoning Ordinance does not classify gas lines as a use, rather they are considered as a public facility, are not restricted to a specific zone and are an allowed outright use throughout the City (CEC 2012f).

Laydown Area

The proposed construction laydown area is a permitted use under the County of San Diego Zoning Ordinance, Temporary Use Regulations (§§ 6100- 6149). Section 6102 (d) permits the construction of temporary buildings and structures supporting residential development and major construction.

COMPLIANCE WITH LORS

Staff's independent analysis of the PPEC concludes that the project would comply with all applicable LORS. **Land Use Table 2** summarizes the PPEC project conformance with these LORS.

Land Use Table 2
Project Compliance with Adopted and Applicable LORS

Applicable LORS	Description	Consistency Determination	Basis for Consistency
Federal			
None			
State			
None			
Local			
Otay Subregional Plan - Volume 1 – Land Use Policy #3 (Adopted August 3, 2011) Develop Industrial Design Criteria.	Requires all proposed industrial development comply with the design criteria in the M56 Mixed Industrial use regulations.	Yes, as conditioned.	The project would be consistent with this policy with the inclusion of Conditions of Certification **LAND-1, LAND-2 VIS-2, VIS-3** and **VIS-5.**
East Otay Mesa Business Park Specific Plan (As Amended by SPA 10-001 - September 15, 2010) Chapter 3, Table 3.2.1 Regulatory Provisions: Building Type.	Requires a "W" Building Type for the Heavy Industrial Designation.	Yes	The project meets the requirement for the Building Type.
East Otay Mesa Business Park Specific Plan (As Amended by SPA 10-001 - September 15, 2010) Chapter 3, Table 3.2.1 Regulatory Provisions: Minimum Lot Size.	Requires a minimum of 30,000-square feet lot size for the Heavy Industrial Designation.	Yes	The project meets the requirement for the Minimum Lot Size.
East Otay Mesa Business Park Specific Plan (As Amended by SPA 10-001 - September 15, 2010) Chapter 3, Table 3.2.1 Regulatory Provisions: Floor Area Ratio.	Requires a Floor Area Ratio 0.5	Yes	The project meets the requirement for the Floor Area Ratio.
East Otay Mesa Business Park Specific Plan (As Amended by SPA 10-001 - September 15, 2010) Chapter 3, Table 3.2.1 Regulatory Provisions: Maximum Building Height.	Requires a Maximum Building Height of 60 feet.	Yes	The project meets the requirement for the Maximum Building Height.
East Otay Mesa Business Park Specific Plan (As Amended by SPA 10-001 - September 15, 2010) Chapter 3, Table 3.2.1 Regulatory Provisions: Maximum Building Coverage.	Requires a Maximum Building Coverage of 0.5	Yes	The project meets the requirement for the Maximum Building Coverage.
East Otay Mesa Business Park Specific Plan (As Amended by SPA 10-001 - September 15, 2010) Chapter 3, Table 3.2.1 Regulatory Provisions: Setbacks.	Requires Minimum Building Setbacks.	Yes	The project meets the requirement for the Minimum Building Setbacks.
East Otay Mesa Business Park Specific Plan (As Amended by SPA 10-001 - September 15, 2010) Chapter 3, Table 3.2.1 Regulatory Provisions: Parking.	Requires parking spaces based on the Gross Square Feet.	Yes, as conditioned.	The project would be consistent with this policy with the inclusion of Condition of Certification **LAND-1.**

East Otay Mesa Business Park Specific Plan Fencing; Chapter 3, Table 3.2-1 Service Areas.	Requires utility screening.	Yes, as conditioned.	The project would be consistent with this policy with the inclusion of Condition of Certification **VIS-2.**
East Otay Mesa Business Park Specific Plan Fencing; Chapter 3, Table 3.2-1, Fences, Walls and Hedges.	Requires a view-obscuring fence.	Yes, as conditioned.	This project would be consistent with this policy with the inclusion of Conditon of Certification **VIS-2.**
East Otay Mesa Business Park Specific Plan Fencing; Chapter 3, Table 3.2-1- Lighting.	Requires compliance with the County Light Pollution Code.	Yes, as conditioned.	The project would be consistent with this policy with the inclusion of Conditions of Certification **VIS-3** and **VIS-5.**
East Otay Mesa Business Park Specific Plan Fencing; Chapter 3, Table 3.2-1- Signage.	Requires compliance with On-Premise Sign Regulations Section 6250.	Yes, as conditioned.	The project would be consistent with this policy with the inclusion of Condition of Certification **LAND-2.**
County Of San Diego-Zoning Ordinance Section 7358.	The County of San Diego Zoning Ordinance Section 7358 - Major Use Permit findings.	Yes	The project is considered a Major Impact Services and Utilities Use and meets all finding requirements and is consistent with Section 7358 of the zoning code for a Major Use Permit.

LAND USE COMPATIBILITY

When a jurisdictional authority, such as the County of San Diego, establishes zoning designations to implement its general plan, it is that agency's responsibility to ensure the compatibility of adjacent zoning and permitted uses and incorporate conditions and restrictions that ensure those uses will not result in a significant adverse impact to surrounding properties. As noted in the discussion above under the section titled **Physical Disruption or Division of an Established Community** and in **Land Use Table 2,** development of the proposed project and its associated facilities would be compatible with existing surrounding land uses because the proposed project site is within an industrial park and adjacent to an existing power plant. In addition, staff's analysis shows that the proposed PPEC would be consistent with applicable LORS in the Otay Subregional Plan, the East Otay Mesa Business Park Specific Plan and County of San Diego Zoning Ordinance.

Therefore, the proposed project would not result in any physical land use incompatibilities with the existing surrounding land uses.

SENSITIVE RECEPTORS

A proposed siting location may be considered inappropriate if a new source of pollution or hazard is located within proximity to a sensitive receptor. From a land use perspective, sensitive receptor sites are those locations where people who would be more adversely affected by pollutants, toxins, noise, dust, or other project-related consequence or activity are likely to live or gather. Children, those who are ill or immune-compromised, and the elderly are generally considered more at risk from environmental pollutants. Therefore, schools, along with day-care facilities, hospitals, nursing homes, and residential areas, are considered to be sensitive receptor sites for the purposes of determining a potentially significant environmental impact.

Depending on the applicable code, proximity is defined as "within 1,000 feet" of a school

(Health & Safety Code §§42301.6–9) or within 0.25 mile of a sensitive receptor, under CEQA (CCR 2006). Proximity is not necessarily a determining factor for a potentially significant impact, but is the threshold generally used to require further evaluation.

The proposed PPEC project would be within approximately 0.8 mile of the three single-family residences located on Alta Road and the Richard J. Donovan Correctional Facility to the northwest. The next nearest sensitive receptors include the Danmar Day Care, 3.9 miles northwest; Olympian High School, 3.9 miles northwest; the Erachel and H Street Board-Care facility, 6.2 miles northwest; the Kaiser Hospital, 6.4 miles west; and the Sharp Chula Vista Medical Center, 6.4 miles west (PPEC 2011a).

From a land use perspective, the siting of the proposed project at the existing location would be compatible with surrounding sensitive receptors. The focus of the East Otay Mesa Business Park Specific Plan is to designate areas for industrial development. The **Air Quality, Hazardous Materials Management, Noise and Vibration, Public Health, Traffic and Transportation,** and **Visual Resources** sections in this document provide detailed analyses of the dust, noise, public health hazards or nuisance, and adverse traffic or visual impacts on surrounding sensitive receptors.

Noise and Vibration staff conclude if the project were built and operated in accordance with the proposed Conditions of Certification **NOISE-1** through **NOISE-6,** the project would produce no significant adverse noise impacts on people within the affected area, directly, indirectly, or cumulatively.

Public Health staff conclude if the project were built and operated in accordance with the proposed Condition of Certification **PUBLIC HEALTH-1** (Cooling Water Management Plan) to ensure that the potential for bacterial growth in cooling water is kept to a minimum, no significant adverse public health impacts on people within the affected area, directly, indirectly, or cumulatively.

The analyses for these sections conclude that, with implementation of staff's proposed conditions of certification, there would be no unmitigated adverse impacts at any sensitive receptor location. In addition, based on the land use designation, zoning, and surrounding industrial developments, the proposed project would not result in a significant project-related impact to any sensitive receptor location.

CUMMULATIVE 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.§15065(a)(3).

Staff reviewed known past, current, and probable future projects in the vicinity of the proposed PPEC project, which staff defined as the community of Otay Mesa, in the County of San Diego. As noted in the AFC, existing projects in the vicinity of the PPEC project site include industrial facilities and uses. Refer to the projects identified in **Land Use Table 3, Cumulative Projects** below and shown on **Land Use Figure 4**.

Land Use Table 3
Cumulative Projects

Map Identification Number	Jurisdiction	Project	Project Description	Location/ Distance from Proposed PPEC Project Site	Status of Project
1	County of San Diego	Vulcan Batch Plant	Proposed asphalt and ready-mix concrete plant	7522 Paseo de la Fuente; approximately 0.25 miles southeast of project site	**Approved** The site plan (3500-07-038) has been approved and building permits are in the process of review.
2	County of San Diego	Otay Hills Construction Aggregate Extraction Operation	Proposed aggregate quarry	Approximately 0.5 miles southeast of the project site.	**Under Review** The major use permit (3300-04-004) for this project is in the process of review.
3	County of San Diego	Corrections Corporation of America Correctional Facility/East Mesa Detention Facility	Modified Major Use Permit (MUP) for a secure detention facility to be constructed in two phases. Original project is proposed to be relocated to the southeasterly portion of the previously approved MUP 98-001.	Northeast intersection of Alta Road and Calzada de la Fuente (north of existing Otay Mesa Generating Facility property-approximately 600 feet northeast of the proposed PPEC Project.	**Approved** The MUP modification for the project has been approved. (3301-06-074-01) Building permits were submitted to the County of San Diego but were cancelled by the applicant and never approved.
4	County of San Diego	Otay Crossings Commerce Park	Proposed Industrial development subdivision and grading of 311.5 acres into 59 individual lots in preparation for future development of an industrial park.	Southeast of Otay Mesa Road and Alta Road.	**Under Review** The tentative map for this project is in the process of review.
5	County of San Diego	International Industrial Park	Proposed subdivision of approximately 170 acres into ten parcels for technology/business park use.	Alta Road and Lone Star Road.	**Under Review** The tentative map for this project is in the process of review.

Map Identification Number	Jurisdiction	Project	Project Description	Location/ Distance from Proposed PPEC Project Site	Status of Project
6	County of San Diego	Otay Mesa Generating Project	Existing Power Plant	Located immediately east of the proposed PPEC project site.	**Built and in operation.**

Source: Pio Pico Energy Center AFC Figure 5.18-1, Cumulative Projects.

The listed projects are located within the East Otay Mesa Business Park Specific Plan which is designed to promote development of the area into a comprehensive industrial and business district. The PPEC would not result in incremental land use-related impacts that would be cumulatively considerable when viewed in connection with the projects noted above for the following reasons:

- The project would not physically divide an existing community as land uses within one mile of the project site are mostly industrial.
- The project would not convert any farmland with the Farmland Mapping and Monitoring Program designations of Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance to non-agricultural use.
- The project would not conflict with existing zoning for, or cause rezoning of forest, timberland or timberland zoned Timberland Production.
- The project would not conflict with the Multiple Species Conservation Program – South County Subarea Plan.
- Staff's analysis shows the project would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction with the inclusion of the proposed conditions of certification.

For these reasons, the PPEC would not result in significant cumulative land use impacts.

FACILITY CLOSURE

At some point in the future, the proposed power plant facility would permanently cease operation and close down. At that time, it would be necessary to ensure that closure is carried out in such a way that public health, safety and the environment are protected from adverse impacts.

The planned lifetime of the plant is 30 years; however, if the plant is still economically viable, it can operate longer. It is also possible that the plant could become economically noncompetitive earlier than 30 years and be permanently closed earlier. When the plant is permanently closed, a decommissioning plan would be developed detailing the closure procedure to ensure that public health, safety and the environment

are protected. At least 12 months prior to decommissioning, the applicant would prepare a Facility Closure Plan for Energy Commission review and approval prior to decommissioning. The review and approval process would be public and allow participation by interested parties and other regulatory agencies. At the time of closure, all pertinent LORS would be identified and the closure plan would discuss conformance of decommissioning, restoration, and remediation activities with these LORS. All of these activities would be under the authority of the Energy Commission.

There are two other circumstances in which a facility closure can occur; unexpected temporary closure or unexpected permanent closure. Staff has not identified LORS from a land use perspective that the applicant would need to comply with in the event of an unexpected temporary or permanent closure of the PPEC.

NOTEWORTHY PUBLIC BENEFITS

While the development of the proposed project is intended to address the requirements of federal and state mandates to develop renewable energy, it would not yield any noteworthy public benefits related to land use.

RESPONSE TO PUBLIC AND AGENCY COMMENTS

Commission staff has not received any public or agency comments on the proposed PPEC project related to land use.

CONCLUSIONS AND RECOMMENDATIONS

The proposed PPEC would be located within the East Otay Mesa Business Park Specific Plan in unincorporated southwestern San Diego County.

Staff concludes the PPEC:

- Would not convert any Farmland (as classified by the Farmland Mapping and Monitoring Program) to non-agricultural use, conflict with existing agricultural zoning or Williamson Act contracts or convert forest land to non-forest use.
- Would not conflict with existing zoning for agricultural use or a Williamson Act contract.
- Would not conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production.
- Would not result in the loss of forest land or conversion of forest land to non-forest use.
- Would not directly or indirectly divide an established community or disrupt an existing or recently approved land use.
- Would not 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.

- 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 concludes that with the adoption of staff's proposed Conditions of Certification **LAND-1, LAND-2, VIS-2, VIS-3 and VIS-5,** the PPEC would be consistent with the Otay Subregional Plan, the East Otay Mesa Business Park Specific Plan, and the County of San Diego Zoning Ordinance.

The total population within the six-mile radius of the PPEC site is 67,796 persons, and the total minority population is 54,375 persons or 80 % of the total population (**Socioeconomics Figure 1**). Energy Commission staff has not identified any significant adverse direct or cumulative land use impact resulting from the construction or operation of the proposed project. 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.

PROPOSED CONDITIONS OF CERTIFICATION

LAND-1 The project owner shall provide twelve on-site parking spaces and one bicycle space.

Verification: At least thirty 30 calendar days prior to start of construction of the permanent parking area, the project owner shall submit evidence to the Compliance Project Manager (CPM) for review and approval that the specified number of parking spaces are provided.

The project owner shall notify the CPM within seven calendar days after completion of the permanent parking area that the parking area is ready for inspection.

LAND-2 The project owner shall ensure that any proposed signs comply with the On-Premise Sign Regulations Section 6250 through 6299 contained in the County of San Diego Zoning Ordinance.

Verification: At least thirty (30) days prior to the installation of any sign(s), the project owner shall submit evidence to the Compliance Project Manager (CPM) for review and approval that the proposed signs will conform to the guidelines. The submittal shall show the location of all proposed sign(s). The submittal to the CPM shall include evidence of review and comment by the County of San Diego.

The project owner shall notify the CPM within seven (7) days after installation of the sign(s) that the sign(s) are ready for inspection.

REFERENCES

CCR 2006. California Code of Regulations, Title 14, CEQA Guidelines

CDOC, 2008, California Department of Conservation, Farmland Mapping and Monitoring Program, website accessed July 15, 2011. http://www.conservation.ca.gov/dlrp/FMMP/Pages/Index.aspx

CEC 2012d – California Energy Commission/ Candace Hill (tn 63611). Record of Conversation (ROC) with County of San Diego/ Daniella Rosenberg, dated August 18, 2011. Submitted to CEC/Dockets on February 10, 2012.

CEC 2012e -- California Energy Commission/ Candace Hill (tn 63624). Record of Conversation (ROC) with County of San Diego/ Everett Hauser, dated September 9, 2011. Submitted to CEC/Dockets on February 10, 2012.

CEC 2012f -- California Energy Commission/ Candace Hill (tn 63610). Record of Conversation (ROC) with County of San Diego/ Dan Joyce , dated October 26, 2011. Submitted to CEC/Dockets on February 10, 2012.

CEC 2012g -- California Energy Commission/ Candace Hill (tn 63623). Record of Conversation (ROC) with County of San Diego/ Everett Hauser, dated September 6, 2011. Submitted to CEC/Dockets on February 10, 2012.

CSD 1978 - County of San Diego Zoning Ordinance.

CSD 1997- San Diego County 1997 County of San Diego Multiple Species Conservation Program Subarea Plan.

CSD 2010 - County of San Diego Department of Planning and Land Use. East Otay Mesa Business Park Specific Plan Amendment. 2010 Combined Plan (SPA 10-001). Approved September 15, 2010.

CSD 2011a - County of San Diego, General Plan, Land Use Element, Chapter 3.

CSD 2011b - Otay Subregional Plan website accessed August 19, 2011. http://www.sdcounty.ca.gov/dplu/gpupdate/comm/otay.html

CSD 2011c - County of San Diego, Rosemary Rowan (tn 60986) CEC Letter to County of San Diego regarding Request for County of San Diego Comments and Recommendations on Pio Pico Energy Center.

PPEC 2011a – Pio Pico Energy Center, LLC / G. Chandler (tn 59646). Application for Certification Volume 1 & 2, dated February 9, 2011. Submitted to CEC/Docket Unit on February 9, 2011.

PPEC 2011d – Pio Pico Energy Center, LLC (tn 60177). Data Adequacy Supplement,

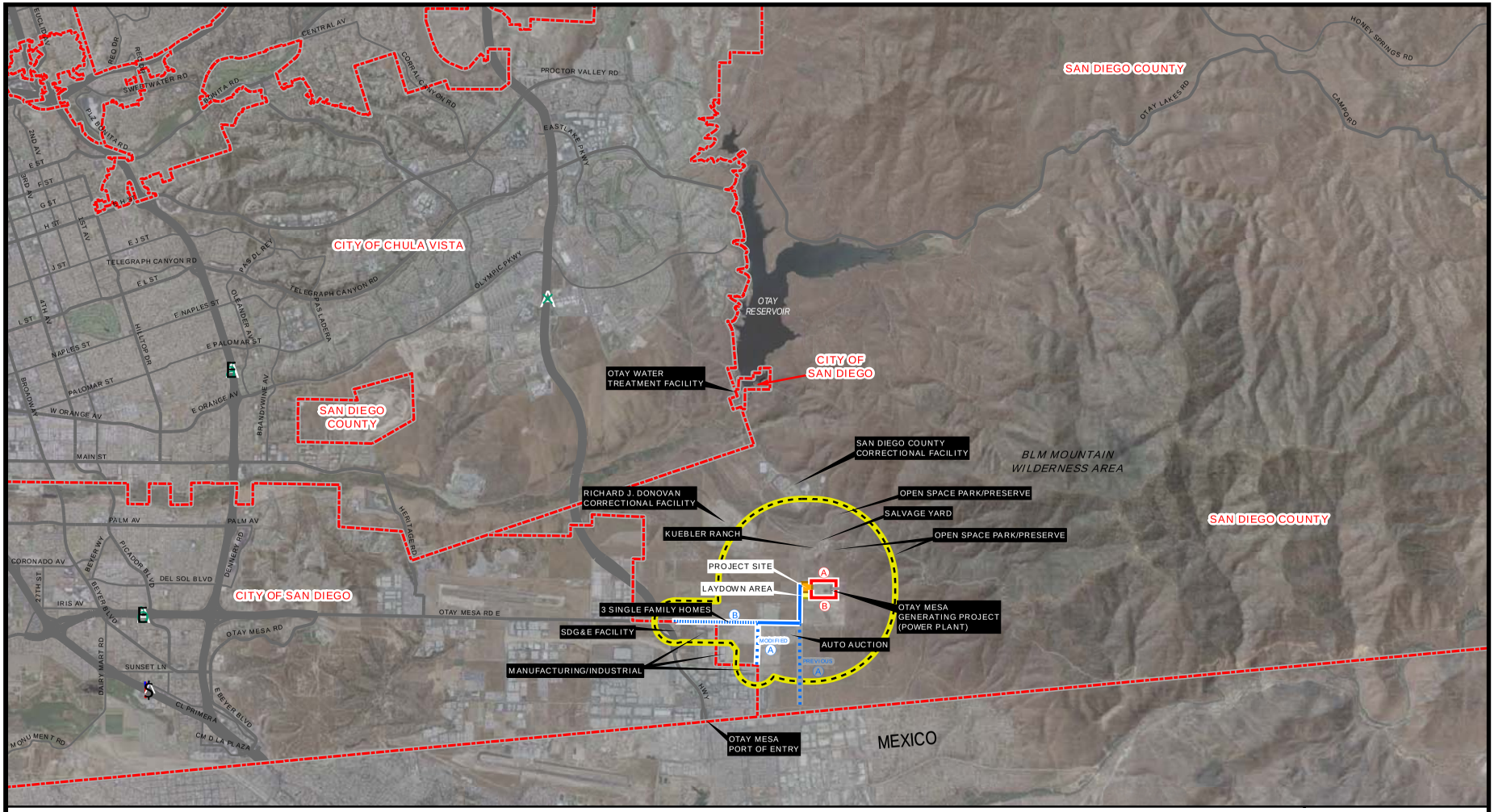
dated April 1, 2011. Submitted to CEC/Docket Unit on April 1, 2011.

PPEC 2011h – Pio Pico Energy Center, LLC / M. Foster (tn 61017). Pio Pico Energy Center LLC's AFC Refinement, dated June 8, 2011. Submitted to CEC/Docket Unit on June 8, 2011.

PPEC 2011s - Pio Pico Energy Center, LLC/M. Foster (tn 62652). Application for Certification Refinement-Enhanced Water Treatment System, dated October 27, 2011. Submitted to CEC/Docket Unit on October 27, 2011.

LAND USE - FIGURE 1

Pio Pico Energy Center - Jurisidictional Boundaries and Existing Land Uses Surrounding Site



Source: DigitalGlobe, 2009

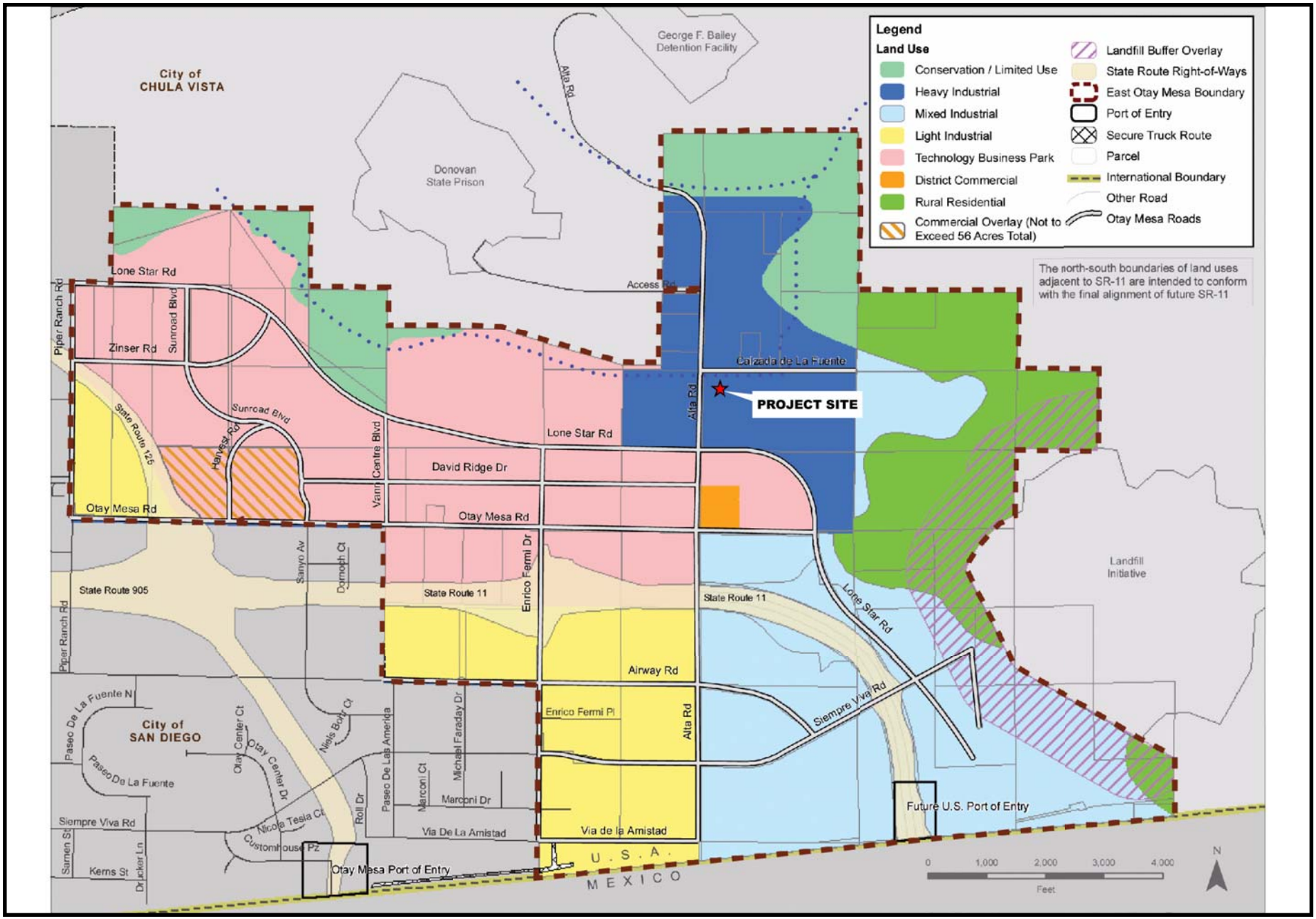
LAND USE

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Refinement June 2011 - Figure 5.9-1 (Revised)

LAND USE - FIGURE 2

Pio Pico Energy Center - East Otay Mesa Business Park Specific Plan



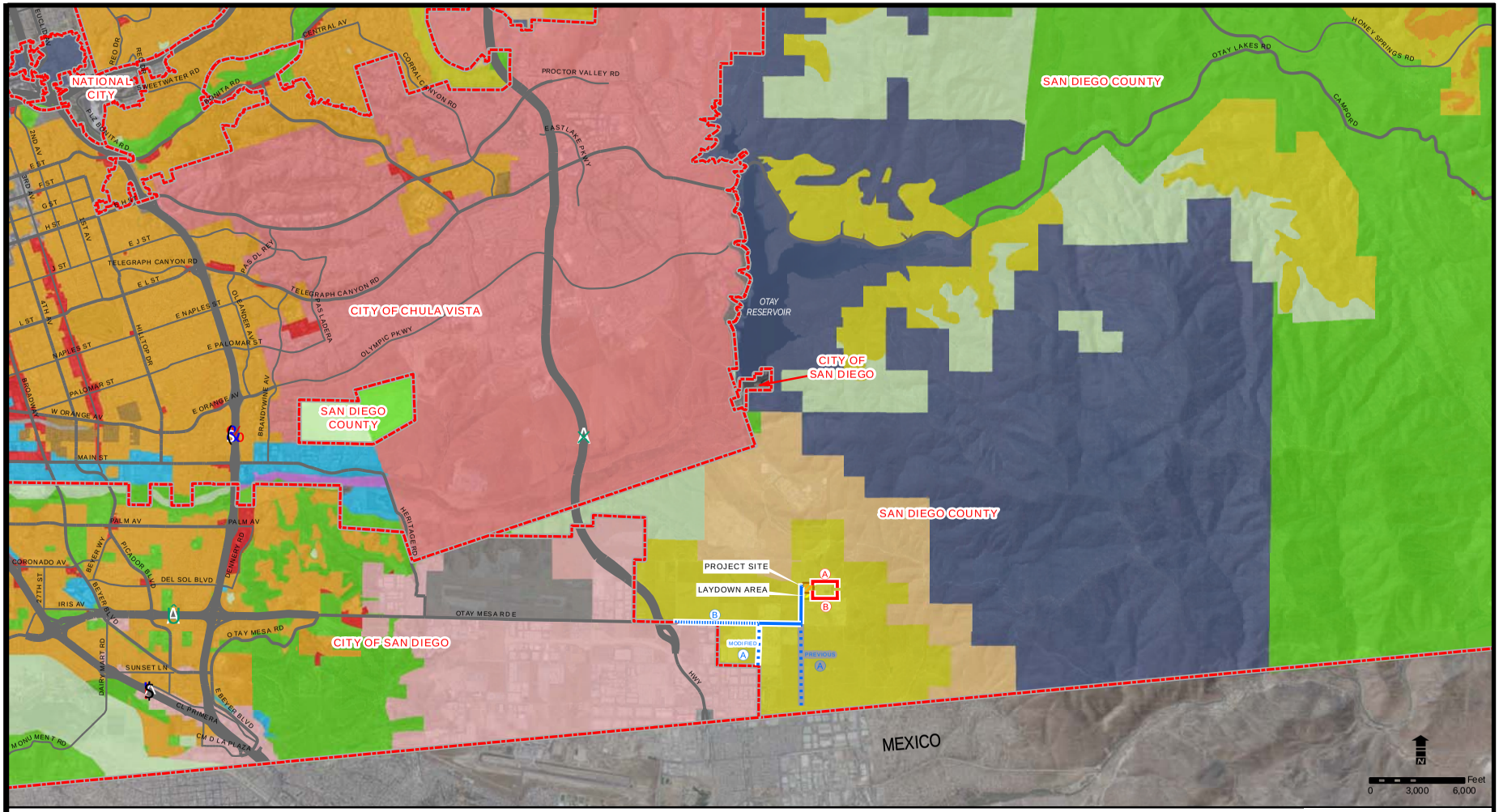
LAND USE

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 5.9-4

LAND USE - FIGURE 3

Pio Pico Energy Center - City and County Zoning Designations



Legend

- Jurisdictional Boundary
- Project Site
- Laydown Area
- 230 kV Transmission Line (Route A and Route B)
- Natural Gas Line
- Modified Route A Natural Gas Line
- Previous Route A Natural Gas Line
- Route B Natural Gas Line

Zoning

- Agriculture
- Commercial
- Floodway
- Holding Area
- Industrial
- Limited Control
- Mobile Home Park
- Open Space
- Planned Community
- Planned District
- Residential
- Specific Plan
- Transportation and Utility
- Unclassified

Source: SanGIS (City of San Diego and County of San Diego, 2008). City of Chula Vista, 2004.

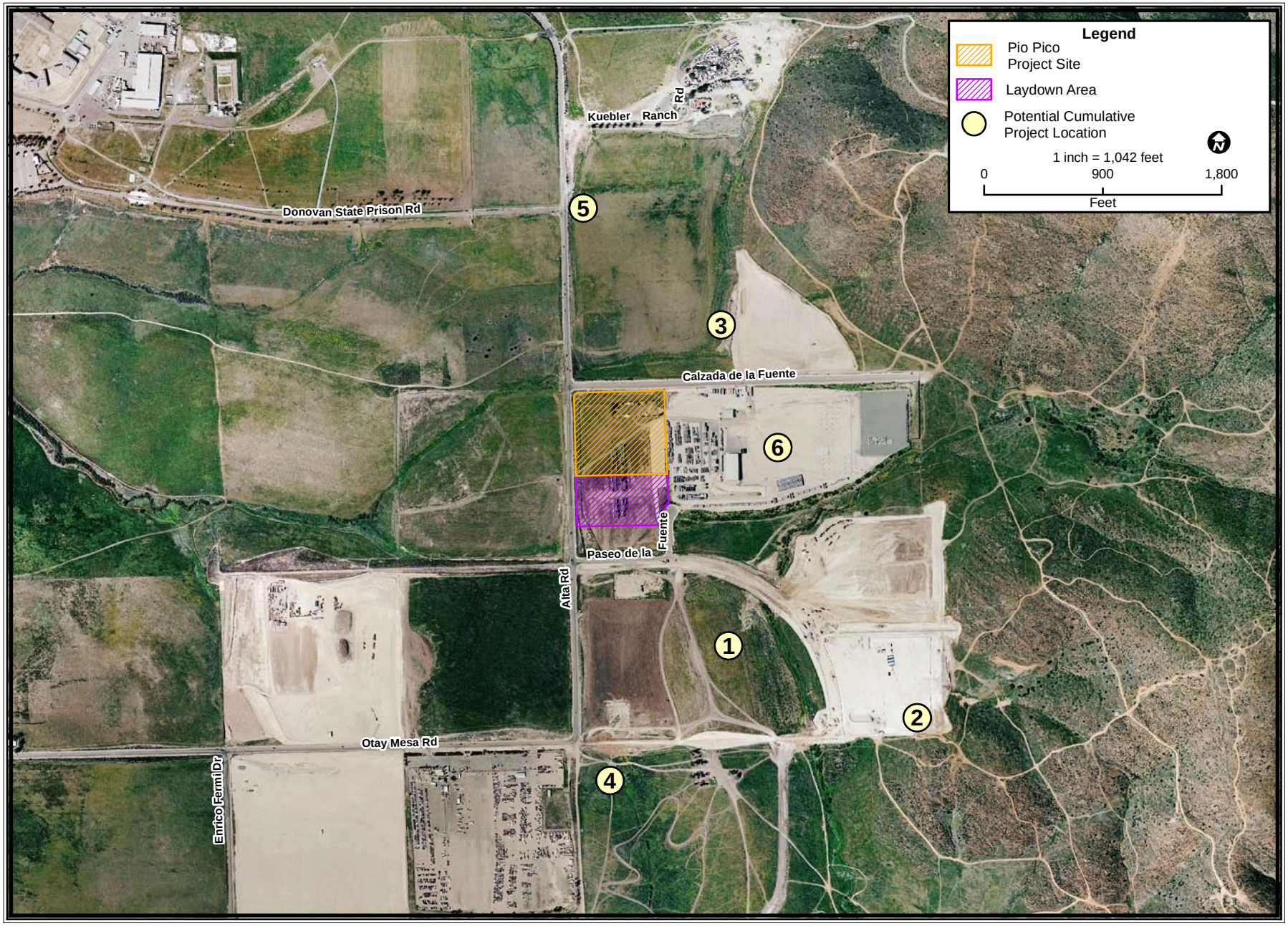
LAND USE

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Refinement June 2011 - Figure 5.9-2 (Revised)

LAND USE - FIGURE 4

Pio Pico Energy Center - Cumulative Impact Projects



CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Digital Globe & URS Corporation.

NOISE AND VIBRATION

Shahab Khoshmashrab

SUMMARY OF CONCLUSIONS

The Pio Pico Energy Center (PPEC), if built and operated in conformance with the proposed conditions of certification below, would comply with all applicable noise and vibration laws, ordinances, regulations and standards, and would produce no significant adverse noise impacts on people within the affected area, directly, indirectly, or cumulatively. The applicant has proposed appropriate mitigation, in the form of good design practice and selection of appropriate project equipment, to avoid any significant adverse impacts.

INTRODUCTION

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

The purpose of this analysis is to identify and examine the likely noise and vibration impacts from the construction and operation of the PPEC project, and to recommend procedures to ensure that the resulting noise and vibration impacts would be adequately mitigated to comply with applicable laws, ordinances, regulations and standards (LORS). For an explanation of technical terms used in this section, please refer to **Noise Appendix A**, immediately following.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

NOISE Table 1
Laws, Ordinances, Regulations and Standards

Applicable Law	Description
Federal:	
Occupational Safety & Health Act (OSHA): 29 U.S.C. § 651 et seq	Protects workers from the effects of occupational noise exposure.
U.S. Environmental Protection Agency (USEPA)	Assists state and local government entities in development of state and local LORS for noise.
State:	
California Occupational Safety & Health Act (Cal-OSHA): 29 U.S.C. § 651 et seq., Cal. Code Regs., tit. 8, §§ 5095-5099	Protects workers from the effects of occupational noise exposure.
Local:	
County of San Diego General Plan, Noise Element, Chapter 8	Establishes operational noise level limits for noise-sensitive receptors.
County of San Diego Regulatory Ordinances, Noise Ordinance, Chapter 4	Limits construction noise level to 75 dBA at the property line of an occupied property and requires noisy[1] construction activities to occur between 7 a.m. and 7 p.m. Monday through Saturday

FEDERAL

Under the Occupational Safety and Health Act of 1970 (OSHA) (29 U.S.C. § 651 et seq.), the Department of Labor, Occupational Safety and Health Administration, (OSHA) adopted regulations (29 C.F.R. § 1910.95) designed to protect workers against the effects of occupational noise exposure. These regulations list permissible noise exposure levels as a function of the amount of time during which the worker is exposed (see **Noise Appendix A, Table A4**, immediately following this section). The regulations further specify a hearing conservation program that involves monitoring the noise to which workers are exposed, assuring that workers are made aware of overexposure to noise, and periodically testing the workers' hearing to detect any degradation.

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.

[1] Noise that draws legitimate complaint (for definition of "legitimate complaint", see footnote 5).

There are no federal laws governing off-site (community) noise.

The Federal Transit Administration (FTA) has published guidelines for assessing the impacts of ground-borne vibration associated with construction of rail projects, which have been applied by other jurisdictions to other types of projects. The FTA-recommended vibration standards are expressed in terms of the "vibration level," which is calculated from the peak particle velocity measured from ground-borne vibration. The FTA measure of the threshold of perception is 65 vibrational decibel (VdB), which correlates to a peak particle velocity of about 0.002 inches per second (in/sec). The FTA measure of the threshold of architectural damage for conventional sensitive structures is 100 VdB, which correlates to a peak particle velocity of about 0.2 in/sec.

STATE

California Government Code Section 65302(f) encourages each local governmental entity to perform noise studies and implement a noise element as part of its general plan. In addition, the California Office of Planning and Research has published guidelines for preparing noise elements, which include recommendations for evaluating the compatibility of various land uses as a function of community noise exposure.

The State of California, Office of Noise Control, prepared the Model Community Noise Control Ordinance, which provides guidance for acceptable noise levels in the absence of local noise standards. This model also defines a simple tone, or "pure tone," as one-third octave band sound pressure levels that can be used to determine whether a noise source contains annoying tonal components. The Model Community Noise Control Ordinance further recommends that, when a pure tone is present, the applicable noise standard should be lowered (made more stringent) by five A-weighted decibels (dBA).

The California Occupational Safety and Health Administration (Cal-OSHA) has promulgated occupational noise exposure regulations (Cal. Code Regs., tit. 8, §§ 5095-5099) that set employee noise exposure limits. These standards are equivalent to federal OSHA standards (see **Noise Appendix A, Table A4**).

LOCAL

San Diego County LORS

The project is located in an unincorporated industrial area of San Diego County. The County of San Diego General Plan, Noise Element (County 2007a) and Noise Ordinance of San Diego County Regulatory Ordinances (County 2007b) apply to this project.

The County of San Diego establishes noise compatibility guidelines in the Noise Element of the County of San Diego General Plan. These guidelines are used to evaluate the noise impacts from new projects. Land use categories and their corresponding maximum allowable noise exposure levels (in terms of CNEL) can be found in Table N-1 of the County of San Diego Noise Element. (See **NOISE APPENDIX A** for the definition of the CNEL Metric.) The maximum exterior CNEL that is considered acceptable for single family and mobile residential use, similar to those in the project area, is 60 dBA CNEL (equivalent to 53 dBA L_{eq} for a constant L_{eq} level). In addition,

County's Noise Ordinance, Section 36.404, limits operational noise levels to 50 dBA L_{eq} between 7 a.m. and 10 p.m. and to 45 dBA L_{eq} between 10 p.m. and 7 a.m. These limits apply to the operation of PPEC.

According to the San Diego County Noise Ordinance, construction is allowed between the hours of 7:00 a.m. and 7:00 p.m. Monday through Saturday, and construction noise between these hours is limited to 75 dBA L_{eq} (energy average) at the property line of an occupied property. (See **NOISE APPENDIX A** for further definition of the L_{eq} Metric.) These requirements are referenced in the County's Noise Ordinance, Section 36.404. These requirements apply to the construction of PPEC.

SETTING

The proposed PPEC project site is located in an industrial area of San Diego County and is comprised of approximately 10 acres in the southeast quadrant of the Alta Road and Calzada de la Fuente intersection adjacent to Otay Mesa Power Plant project (formally known as Otay Mesa Generating Project). Existing land uses surrounding the project site include Specific Plan Area land uses. Other land uses exist in the project area (see **Noise Figure 1**). Sources of noise in the area include aircraft, gunfire from the nearby shooting range, domestic animals, aircraft, occasional distant horns, and distant industrial noise (PPEC 2011a, AFC § 5.12.1.3).

Sensitive noise receptors[2] in the vicinity of the project include three single-family residences located approximately 4,700 feet southwest of the project site (identified as LT-1), and a mobile home community located approximately 1.5 miles (7,900 feet) northwest of the project site (identified as LT-2).

For purposes of evaluating impacts on residential uses, the project noise is compared with measured nighttime ambient noise levels, when residents are trying to sleep.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHODS AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires that significant environmental impacts be identified and either eliminated or mitigated to the extent feasible. Section XI of Appendix G of CEQA's guidelines (Cal. Code Regs., tit. 14, App. 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:

[2] A sensitive noise receptor, also referred to as a noise-sensitive receptor, is a receptor at which there is a reasonable degree of sensitivity to noise (such as residences, schools, hospitals, elder care facilities, libraries, cemeteries, and places of worship).

1. exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

2. exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels;

3. substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or

4. substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

The Energy Commission staff, in applying Item 3, above, to the analysis of this and other projects, has concluded that a potential for a significant noise impact exists where the noise of the project plus the background exceeds the background by more than 5 dBA at the nearest sensitive receptor, including those receptors that represent the area's minority population.

Staff has concluded that an increase in background noise levels up to and including 5 dBA in a residential setting is insignificant; an increase of more than 10 dBA, however, is clearly significant. An increase of between 5 and 10 dBA should be considered adverse, but could be either significant or insignificant, depending upon the particular circumstances of a particular case.

Factors to be considered in determining the significance of an adverse impact as defined above include:

1. the resulting noise level;[3]

2. the duration and frequency of the noise;

3. the number of people affected; and

4. the land use designation of the affected receptor sites.

Noise due to construction activities is usually considered to be insignificant in terms of CEQA compliance if:

- the construction activity is temporary; and
- the use of heavy equipment and noisy activities is limited to daytime hours.

Staff uses the above method and threshold to protect the most sensitive populations, including the area's minority population.

[3] For example, a noise level of 40 dBA would be considered quiet in many locations. A noise limit of 40 dBA would be consistent with the recommendations of the California Model Community Noise Control Ordinance for rural environments, and with industrial noise regulations adopted by European jurisdictions. If the project would create an increase in ambient noise no greater than 10 dBA at nearby sensitive receptors, and the resulting noise level would be 40 dBA or less, the project noise level would likely be insignificant.

Ambient Noise Monitoring

In order to establish a baseline for the comparison of predicted project noise with existing ambient noise, the applicant has presented the results of an ambient noise survey (PPEC 2011a, AFC § 5.12.2.2; Tables 5.12-2, 5.12-4). This survey was performed using acceptable equipment and techniques. The noise survey monitored existing noise levels at the following two locations, shown in **Noise Figure 2**:

1. Location LT-1: Near the closest residences to the project site. This location represents three single-family residences located approximately 4,700 feet southwest of the project site. This location was monitored continuously from 1:00 p.m. on December 9 through 2:00 p.m. on December 10, 2010.

2. Location LT-2: Near a mobile home community located approximately 7,900 feet northwest of the project site. This location was monitored continuously from 6:00 p.m. on March 16 through 7:00 p.m. on March 17, 2010.

As explained above, the noise environment in the vicinity of the project site is dominated by aircraft, gunfire from the nearby shooting range, domestic animals, aircraft, occasional distant horns, and distant industrial noise sources.

NOISE Table 2 summarizes the ambient noise measurements (PPEC 2011a, AFC § 5.12.2.2; Tables 5.12-2, 5.12-4).

NOISE Table 2
Summary of Measured Noise Levels

Measurement Sites	Measured Noise Levels, dBA	
	Nighttime Hours[1] L_{90}	Average During Daytime Hours[2] L_{eq}
LT-1, Single-Family Homes 4,700 feet Southwest of Site	41	72
LT-2, Mobile Homes 7,900 feet Northwest of Site	35	51

Source: PPEC 2011a, AFC § 5.12.2.2; Tables 5.12-2, 5.12
[1.] Staff calculations of average of four quietest consecutive hours of the nighttime (see NOISE APPENDIX A)
[2.] Staff calculation of average of the daytime hours (see NOISE APPENDIX A)

DIRECT IMPACTS AND MITIGATION

Noise impacts associated with the project can be created by short-term construction activities and normal long-term operation of the project.

Construction Impacts and Mitigation

Construction noise is usually a temporary phenomenon. Construction of the PPEC project is expected to be typical of similar projects in terms of schedule, equipment used, and other types of activities (PPEC 2011a, AFC § 5.12.4.1).

Compliance with LORS

Construction of an industrial facility such as a power plant is typically noisier than permissible under usual noise ordinances. In order to allow the construction of new facilities, construction noise during certain hours of the day is commonly exempt from enforcement by local ordinances.

The applicant has predicted construction noise levels to range between 45 and 49 dBA at the above residential receptors. They are summarized here in **NOISE Table 3**.

NOISE Table 3:
Predicted Construction Noise Levels

Receptor/Distance	Highest Construction Noise Level (dBA) [1]	Measured Existing Ambient, Average Daytime L_{eq} (dBA) [2]	Cumulative, dBA	Change
LT-1 (Single-Family)/4,700 feet	49	72	72	0
LT-2 (Mobile Homes)/7,900 feet	45	51	52	+1

Sources: [1] PPEC 2011a, AFC Table 5.12-8
[2] NOISE Table 2, above

Staff compares the projected noise levels with ambient levels (please see the following discussion under **CEQA Impacts**).

The applicant commits to performing noisy construction work during the times specified in the San Diego County Noise Ordinance and the noise levels at the nearest receptors would not exceed 75 dBA as required by this code (PPEC 2011a, AFC §§ 5.12.4.1, 5.12.6.1). To ensure that these requirements are, in fact, enforced, staff proposes Condition of Certification **NOISE-6**.

Therefore, the noise impacts of the PPEC project construction activities would comply with the noise LORS.

CEQA Impacts

Since construction noise typically varies with time, it is most appropriately measured by, and compared with, the L_{eq} metric. As seen in **NOISE Table 3** above, last column, construction noise would not affect the existing ambient noise level at LT-1, and would increase the existing ambient noise level at LT-2 by only 1 dBA, an unnoticeable increase. Therefore, the noise effects of plant construction are considered to be insignificant at the above receptors.

To ensure the project construction would create less than significant adverse impacts at the most noise-sensitive receptors, in addition to Condition of Certification **NOISE-6**, staff proposes Conditions of Certification **NOISE-1** and **NOISE-2**, which would establish a public notification and noise complaint process to resolve any complaints regarding construction noise.

In light of the following proposed conditions of certification, the noise impacts of the PPEC project construction activities would be less than significant.

Linear Facilities

New offsite linear facilities would include a natural gas pipeline, supply water pipeline, sewer and storm water pipelines, and an electric transmission line (PPEC 2011a, AFC §§ 3.3, 5.12.4.1).

Construction of linear facilities typically moves along at a rapid pace, thus not subjecting any one receptor to noise impacts for more than two or three days. Further, construction activities would be limited to daytime hours. To ensure that these hours are, in fact, adhered to, in compliance with the LORS, staff proposes Condition of Certification **NOISE-6**.

Vibration

The only construction operation likely to produce vibration that could be perceived off site would be pile driving. The applicant anticipates that pile driving would not be required for construction of the PPEC project (PPEC 2011a, AFC § 5.12.4.1). Therefore, no vibration impacts are expected.

Worker Effects

The applicant has acknowledged the need to protect construction workers from noise hazards and has recognized applicable LORS that would protect construction workers (PPEC 2011a, AFC § 5.12.6.1). To ensure that construction workers are, in fact, adequately protected, staff proposes Condition of Certification **NOISE-3**.

Operation Impacts and Mitigation

The primary noise sources of the PPEC project include engine generators and their exhaust stacks, combustion air inlets, gas compressor, air coolers, electric transformers, and various pumps and fans. Staff compares the projected project noise with applicable LORS, in this case the San Diego County LORS. In addition, staff evaluates any increase in noise levels at sensitive receptors due to the project in order to identify any significant adverse impacts.

Proposed noise mitigation measures include the following (PPEC 2011a, AFC § 5.12-17, Figure 6.12-2):

- stack silencing;
- inlet air silencing;
- gas compressor enclosure
- CTG turbine enclosure; and
- CTG auxiliary enclosure.

In addition, the project would avoid the creation of annoying tonal (pure-tone) noises by balancing the noise emissions of various power plant features during plant design (PPEC 2011a, AFC § 5.12.4.2).

Compliance with LORS

The applicant performed noise modeling to determine the project's noise impacts on sensitive receptors (PPEC 2011a, AFC § 5.12.4.2). The applicant has predicted operational noise levels; they are summarized in **NOISE Table 4** below.

As explained above, the maximum exterior CNEL that is considered acceptable for single family and mobile residential use, similar to those in the project area, is 60 dBA CNEL (equivalent to 53 dBA L_{eq} for a constant L_{eq} level). In addition, County's Noise Ordinance, Section 36.404, limits operational noise levels to 50 dBA L_{eq} between 7 a.m. and 10 p.m. and to 45 dBA L_{eq} between 10 p.m. and 7 a.m. Staff compares the project to the most restrictive LORS limit, 45 dBA L_{eq} between the hours of 10 p.m. and 7 a.m. As shown in **NOISE Table 4**, the project's noise levels of 36 and 34 at LT-1 and LT-2, respectively, would be less than this limit.

To ensure that the project will not exceed these predicted noise levels, staff proposes Condition of Certification **NOISE-4**. This condition states that if the project's noise level alone exceeds the above predicted dBA at the respective receptors, mitigation measures shall be implemented to bring the noise level into compliance with these limits. Also to ensure compliance, staff proposes Conditions of Certification **NOISE-1** and **NOISE-2**, which would establish a public notification and noise complaint process requiring the applicant to resolve any problems that may be caused by operational noise.

With implementation of the following conditions of certification, noise due to the operation of the PPEC project would be in compliance with the applicable LORS.

CEQA Impacts

Power plant noise is unique. A power plant operates as, essentially, a steady, continuous, broadband noise source, unlike the intermittent sounds that make up most of the noise environment. Power plant noise therefore contributes to, and becomes a part of, background noise levels, or the sound heard when most intermittent noises stop. Where power plant noise is audible, it tends to define the background noise level. For this reason, staff typically compares projected power plant noise to existing ambient background (L_{90}) noise levels at affected sensitive receptors. If this comparison identifies a significant adverse impact, then feasible mitigation must be applied to the project to either reduce or remove that impact.

In many cases, a power plant operates around the clock for much of the year. PPEC is expected to operate as an intermediate load and peaking facility, and thus, it could occasionally operate at night, which could annoy nearby residences[4]. For residential receptors, staff evaluates project noise emissions by comparing them with nighttime

[4] The applicant intends to operate the project up to 4,000 hours per year, per combustion turbine (PPEC 2011a, AFC §§ 3.10.2.1, 3.12.3).

ambient background levels; this evaluation assumes that the potential for public annoyance from power plant noise is greatest at night when residents are trying to sleep. Nighttime ambient noise levels are typically lower than daytime levels; differences in background noise levels of 5 to 10 dBA are common. Staff believes it is prudent to average the lowest nighttime hourly background noise levels to arrive at a reasonable baseline for comparison with the project's predicted noise level.

Adverse impacts on residential receptors can be identified by comparing predicted power plant noise levels with the nighttime ambient background noise levels at the nearest sensitive residential receptors.

The applicant has predicted operational noise levels; they are summarized here in **NOISE Table 4**.

NOISE Table 4: Predicted Operational Noise Levels at all Identified Sensitive Residential Receptors

Receptor/Distance	Project Alone Operational Noise Level (dBA) [1]	Measured Existing Ambient, Nighttime L_{90} (dBA) [2]	Cumulative L_{90} (dBA)	Increase in Existing Ambient (dBA)
LT-1/4,700 feet	36	41	42	+1
LT-2/7,900 feet	34	35	38	+3

Sources: [1] PPEC 2011a, AFC Table 5.12-20
[2] NOISE Table 2, above

Combining the ambient noise level of 41 dBA L_{90} (**NOISE Table 4**, above) with the project noise level of 36 dBA at LT-1 would result in 42 dBA L_{90}, 1 dBA above the ambient. As described above (in **Method and Threshold for Determining Significance**), staff regards an increase of up to 5 dBA as a less-than-significant impact. Therefore, staff considers the above noise impact at LT-1 to be less than significant.

Combining the ambient noise level of 35 dBA L_{90} (**NOISE Table 4**) with the project noise level of 34 dBA at LT-2 would result in 38 dBA L_{90}, 3 dBA above the ambient. Staff considers this impact to be less than significant.

Staff proposes Condition of Certification **NOISE-4** to ensure that the noise levels due to project operation would not exceed the above levels (in **NOISE Table 4**, second column).

Tonal Noises

One possible source of annoyance could be strong tonal noises. Tonal noises are individual sounds (such as pure tones) which, while not louder than permissible levels, stand out in sound quality. The applicant plans to address overall noise in project design, and to take appropriate measures, as needed, to eliminate tonal noises as

possible sources of annoyance (PPEC 2011a, AFC § 5.12.4.2). To ensure that tonal noises do not cause public annoyance, staff proposes Condition of Certification **NOISE-4**, which would require mitigation measures, if necessary, to ensure the project would not create tonal noises.

Linear Facilities

All water pipes and gas pipes would be underground and therefore silent during plant operation. Noise effects from electrical interconnection lines typically do not extend beyond the lines' right-of-way easements and would be inaudible to receptors.

Vibration

Vibration from an operating power plant could be transmitted through two primary means: ground (ground-borne vibration), and air (airborne vibration).

The operating components of a simple cycle power plant consist of high-speed gas turbines, compressors, and various pumps. All of these pieces of equipment must be carefully balanced in order to operate; permanent vibration sensors are attached to the turbines and generators. Gas turbine generator facilities using the GE LMS100 machine have not resulted in ground-borne or airborne vibration impacts. Energy Commission staff agrees with the applicant that ground-borne vibration from the PPEC project will be undetectable by any likely receptor.

Airborne vibration (low frequency noise) can rattle windows and objects on shelves, and can rattle the walls of lightweight structures. The PPEC's chief source of airborne vibration would be the gas turbines' exhaust. In a power plant such as the PPEC, however, the exhaust must pass through the selective catalytic reduction (SCR) modules and the stack silencers before it reaches the atmosphere. The SCRs act as efficient mufflers. The combination of SCR units and stack silencers makes it highly unlikely that the PPEC would cause perceptible airborne vibration effects.

Worker Effects

The applicant acknowledges the need to protect plant operating and maintenance workers from noise hazards and commits to compliance with all applicable LORS (PPEC 2011a, AFC § 5.12.4.2). Signs would be posted in areas of the plant with noise levels exceeding 85 dBA (the level that OSHA recognizes as a threat to workers' hearing), and hearing protection would be required and provided. To ensure that plant operation and maintenance workers are adequately protected, Energy Commission staff has proposed Condition of Certification **NOISE-5**. For further discussion of proposed worker safety conditions of certification, please see **Worker Safety and Fire Protection** section of this document.

CUMULATIVE IMPACTS AND MITIGATION

Section 15130 of the CEQA guidelines (Cal. Code Regs., tit. 14) requires a discussion of cumulative environmental impacts. Cumulative impacts are two or more individual impacts that, when considered together, compound or increase other environmental impacts. CEQA guidelines require that this discussion reflect the severity of the impacts

and the likelihood of their occurrence, but do not need to provide as much detail as the discussion of impacts solely attributable to the project.

Staff is aware of one foreseen project that could create a cumulative noise impact in the project area, when combined with PPEC. This project is a secure detention facility called the East Mesa Detention Facility (EMDF) to be located approximately 600 feet northeast of the PPEC site. The County of San Diego Planning Commission recently approved a Major Use Permit (MUP 06-074W1) for EMDF. EMDF's highest noise level from its operations would be 59 dBA L_{eq} at its property line (PPEC 2011a, AFC § 5.12.5). A simple mathematical calculation (based on a 6 dBA decrease per doubling of distance) shows that EMDF would likely create a noise level of no greater than 31 dBA at LT-1 and a noise level of no greater than 27 dBA at LT-2. 31 dBA, when combined with the PPEC's noise level of 36 dBA at LT-1, would result in 37 dBA, less than the existing ambient level at LT-1 (41 dBA). 27 dBA, when combined with the PPEC's noise level of 34 dBA at LT-2, would result in 35, not greater than the existing ambient level at LT-2 (35 dBA). Therefore, the project's cumulative noise impact is considered to be insignificant.

FACILITY CLOSURE

All operational noise from the project would cease when the PPEC project closes, and no further adverse noise impact from its operation would be possible. The remaining potential temporary noise source would be the dismantling of the project structures and equipment, as well as any site restoration work that may be performed. Since this noise would be similar to that caused by the original construction, it could be similarly treated -- that is, noisy work could be performed during daytime hours with machinery and equipment that are properly equipped with mufflers. Any noise LORS in existence at that time would apply. Unless modified, applicable conditions of certification included in the Energy Commission decision would also apply.

CONCLUSIONS

Staff concludes that the PPEC project, if built and operated in conformance with the proposed conditions of certification below, 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 minority populations, directly, indirectly, or cumulatively.

PROPOSED CONDITIONS OF CERTIFICATION

PUBLIC NOTIFICATION PROCESS

NOISE-1 At least 15 days prior to the start of ground disturbance, the project owner shall notify all residents within one mile of the project site and one-half mile of the linear facilities, by mail or by other effective means, of the commencement of project construction. At the same time, the project owner shall establish a telephone number for use by the public to report any undesirable noise

conditions associated with the construction and operation of the project. If the telephone is not staffed 24 hours a day, the project owner shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This telephone number shall be posted at the project site during construction where it is visible to passersby. This telephone number shall be maintained until the project has been operational for at least one year.

Verification: Prior to ground disturbance, the project owner shall transmit to the compliance project manager (CPM) a statement, signed by the project owner's project manager, stating that the above notification has been performed, and describing the method of that notification. This communication shall also verify that the telephone number has been established and posted at the site, and shall provide that telephone number.

NOISE COMPLAINT PROCESS

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

- use the Noise Complaint Resolution Form (below), or a functionally equivalent procedure acceptable to the CPM, to document and respond to each noise complaint;
- attempt to contact the person(s) making the noise complaint within 24 hours;
- conduct an investigation to determine the source of noise in the complaint;
- if the noise is project related, take all feasible measures to reduce the source of the noise; and
- submit a report documenting the complaint and actions taken. The report shall include: a complaint summary, including the final results of noise reduction efforts and, if obtainable, a signed statement by the complainant stating that the noise problem has been resolved to the complainant's satisfaction.

Verification: Within five days of receiving a noise complaint, the project owner shall file a Noise Complaint Resolution Form, shown below, with both the local jurisdiction and the CPM that documents the resolution of the complaint. If mitigation is required to resolve the complaint, and the complaint is not resolved within a three-day period, the project owner shall submit an updated Noise Complaint Resolution Form when the mitigation is performed and complete.

EMPLOYEE NOISE CONTROL PROGRAM

NOISE-3 The project owner shall submit to the CPM for review and approval a noise control program. The noise control program shall be used to reduce employee exposure to high (above permissible) noise levels during construction in accordance to the applicable OSHA and Cal-OSHA standards.

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

NOISE RESTRICTIONS

NOISE-4 The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that the operation of the project will not cause the noise levels due to plant operation alone, during the four quietest consecutive hours of the nighttime, to exceed an average of 36 dBA L_{eq} measured at or near monitoring location LT-1 and an average of 34 dBA L_{eq} measured at or near monitoring location LT-2.

No new pure-tone components shall be caused by the project. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints[5].

A. When the project first achieves a sustained output of 90% or greater of rated capacity, the project owner shall conduct a community noise survey at monitoring location LT-1 or at a closer location acceptable to the CPM. 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.

   During the period of this survey, the project owner shall conduct a short-term survey of noise at the monitoring location LT-2 or at a closer location acceptable to the CPM. The short-term noise measurements at this location shall be conducted continuously during the nighttime hours of 10:00 p.m. to 7:00 a.m.

   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.

B. If the results from the noise survey indicate that the power plant noise at the affected receptor sites exceeds the above values during the four quietest consecutive hours of the nighttime, mitigation measures shall be implemented to reduce noise to a level of compliance with these limits.

[5] A legitimate complaint refers to a complaint about noise that is confirmed by the CPM to be disturbing, and that is caused by the PPEC project as opposed to another source (as verified by the CPM). A legitimate complaint constitutes a violation by the project of any noise condition of certification (as confirmed by the CPM), which is documented by an individual or entity affected by such noise.

C. If the results from the noise survey indicate that pure tones are present, mitigation measures shall be implemented to eliminate the pure tones.

Verification: The survey shall take place within 45 days of the project first achieving a sustained output of 90% or greater of rated capacity. The community noise survey shall be conducted continuously for 25 hours. Within 15 days after completing the survey, the project owner shall submit a summary report of the survey to the CPM. Included in the survey report will be a description of any additional mitigation measures necessary to achieve compliance with the above listed noise limit, and a schedule, subject to CPM approval, for implementing these measures. When these measures are in place, the project owner shall repeat the noise survey.

Within 15 days of completion of the new survey, the project owner shall submit to the CPM a summary report of the new noise survey, performed as described above and showing compliance with this condition.

OCCUPATIONAL NOISE SURVEY

NOISE-5 Following the project's attainment of a sustained output of 90% or greater of its rated capacity, the project owner shall conduct an occupational noise survey to identify any noise hazardous areas in the facility.

The survey shall be conducted by a qualified person in accordance with the provisions of Title 8, California Code of Regulations, sections 5095-5099 (Article 105) and Title 29, Code of Federal Regulations, section 1910.95. The survey results shall be used to determine the magnitude of employee noise exposure.

The project owner shall prepare a report of the survey results and, if necessary, identify proposed mitigation measures to be employed in order to comply with the applicable California and federal regulations.

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

CONSTRUCTION RESTRICTIONS

NOISE-6 Heavy equipment operation and noisy construction work relating to any project features shall be restricted to the times delineated below, unless a special permit has been issued by the CPM:

Mondays through Saturdays: 7:00 a.m. to 7:00 p.m.

Project site's construction noise level shall be no more than 75 dBA L_{eq} measured at the property lines of LT-1 and LT-2.

Haul trucks and other engine-powered equipment shall be equipped with adequate mufflers. Haul trucks shall be operated in accordance with posted speed limits. Truck engine exhaust brake use shall be limited to emergencies.

Verification: Prior to ground disturbance, the project owner shall transmit to the CPM a statement acknowledging that the above restrictions will be observed throughout the construction of the project.

EXHIBIT 1 - NOISE COMPLAINT RESOLUTION FORM

Pio Pico Energy Center
(11-AFC-1)

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

County 2007a – San Diego County General Plan, Noise Element, Chapter 8, Dated March 13, 2007.

County 2007b – San Diego County Regulatory Ordinances, Noise Ordinance, Chapter 4, Dated March 13, 2007.

PPEC 2011a – Pio Pico Energy Center, LLC / G. Chandler (tn 59646). Application for Certification, Volumes 1 & 2, dated February 9, 2011. Submitted to CEC/Docket Unit on February 9, 2011.

NOISE APPENDIX A

FUNDAMENTAL CONCEPTS OF COMMUNITY NOISE

To describe noise environments and to assess impacts on noise sensitive area, a frequency weighting measure, which simulates human perception, is customarily used. It has been found that A-weighting of sound intensities best reflects the human ear's reduced sensitivity to low frequencies and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. Decibels are logarithmic units that conveniently compare the wide range of sound intensities to which the human ear is sensitive. **NOISE Table A1** provides a description of technical terms related to noise.

Noise environments and consequences of human activities are usually well represented by an equivalent A-weighted sound level over a given time period (L_{eq}), or by average day and night A-weighted sound levels with a nighttime weighting of 10 dBA (L_{dn}). Noise levels are generally considered low when ambient levels are below 45 dBA, moderate in the 45 to 60 dBA range, and high above 60 dBA. Outdoor day-night sound levels vary over 50 dBA depending on the specific type of land use. Typical L_{dn} values might be 35 dBA for a wilderness area, 50 dBA for a small town or wooded residential area, 65 to 75 dBA for a major metropolis downtown (e.g., San Francisco), and 80 to 85 dBA near a freeway or airport. Although people often accept the higher levels associated with very noisy urban residential and residential-commercial zones, 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%, 50%, and 90% of the time, respectively, during the measurement period. L_{90} is generally taken as the background noise level.
Equivalent Noise Level, L_{eq}	The energy average A-weighted noise level during the Noise Level measurement period.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 4.8 decibels to levels in the evening from 7 p.m. to 10 p.m., and after addition of 10 decibels to sound levels in the night between 10 p.m. and 7 a.m.
Day-Night Level, L_{dn} or DNL	The Average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10 p.m. and 7 a.m.
Ambient Noise Level	The composite of noise from all sources, near and far. The normal or existing level of environmental noise at a given location (often used for an existing or pre-project noise condition for comparison study).
Intrusive Noise	That noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.
Pure Tone	A pure tone is defined by the Model Community Noise Control Ordinance as existing if the one-third octave band sound pressure level in the band with the tone exceeds the arithmetic average of the two contiguous bands by 5 decibels (dB) for center frequencies of 500 Hz and above, or by 8 dB for center frequencies between 160 Hz and 400 Hz, or by 15 dB for center frequencies less than or equal to 125 Hz.

Source: Guidelines for the Preparation and Content of Noise Elements of the General Plan, Model Community Noise Control Ordinance, California Department of Health Services 1976, 1977.

NOISE Table A2

Typical Environmental and Industry Sound Levels

Noise Source (at distance)	A-Weighted Sound Level in Decibels (dBA)	Noise Environment	Subjective Impression
Civil Defense Siren (100')	140-130		Pain Threshold
Jet Takeoff (200')	120		Very Loud
Very Loud Music	110	Rock Music Concert	
Pile Driver (50')	100		
Ambulance Siren (100')	90	Boiler Room	
Freight Cars (50')	85		
Pneumatic Drill (50')	80	Printing Press Kitchen with Garbage Disposal Running	Loud
Freeway (100')	70		Moderately Loud
Vacuum Cleaner (100')	60	Data Processing Center Department Store/Office	
Light Traffic (100')	50	Private Business Office	
Large Transformer (200')	40		Quiet
Soft Whisper (5')	30	Quiet Bedroom	
	20	Recording Studio	
	10		Threshold of Hearing

Source: Handbook of Noise Measurement, Arnold P.G. Peterson, 1980

Subjective Response to Noise

The adverse effects of noise on people can be classified into three general categories:

- Subjective effects of annoyance, nuisance, dissatisfaction.
- Interference with activities such as speech, sleep, and learning.
- Physiological effects such as anxiety or hearing loss.

The sound levels associated with environmental noise, in almost every case, produce effects only in the first two categories. Workers in industrial plants can experience noise effects in the last category. There is no completely satisfactory way to measure the subjective effects of noise, or of the corresponding reactions of annoyance and dissatisfaction, primarily because of the wide variation in individual tolerance of noise.

One way to determine a person's subjective reaction to a new noise is to compare the level of the existing (background) noise, to which one has become accustomed, with the level of the new noise. In general, the more the level or the tonal variations of a new noise exceed the previously existing ambient noise level or tonal quality, the less acceptable the new noise will be, as judged by the exposed individual.

With regard to increases in A-weighted noise levels, knowledge of the following relationships can be helpful in understanding the significance of human exposure to noise.

1. Except under special conditions, a change in sound level of one dB cannot be perceived.

2. Outside of the laboratory, a three dB change is considered a barely noticeable difference.

3. A change in level of at least five dB is required before any noticeable change in community response would be expected.

4. A ten dB change is subjectively heard as an approximate doubling in loudness and almost always causes an adverse community response. (Kryter, Karl D., The Effects of Noise on Man, 1970).

Combination of Sound Levels

People perceive both the level and frequency of sound in a non-linear way. A doubling of sound energy (for instance, from two identical automobiles passing simultaneously) creates a three dB increase (i.e., the resultant sound level is the sound level from a single passing automobile plus three dB). The rules for decibel addition used in community noise prediction are:

NOISE Table A3
Addition of Decibel Values

When two decibel values differ by:	Add the following amount to the larger value
0 to 1 dB	3 dB
2 to 3 dB	2 dB
4 to 9 dB	1 dB
10 dB or more	0
Figures in this table are accurate to ± 1 dB.	

Source: Architectural Acoustics, M. David Egan, 1988

Sound and Distance

Doubling the distance from a noise source reduces the sound pressure level by six dB.

Increasing the distance from a noise source 10 times reduces the sound pressure level by 20 dB.

Worker Protection

OSHA noise regulations are designed to protect workers against the effects of noise exposure, and list permissible noise level exposure as a function of the amount of time to which the worker is exposed:

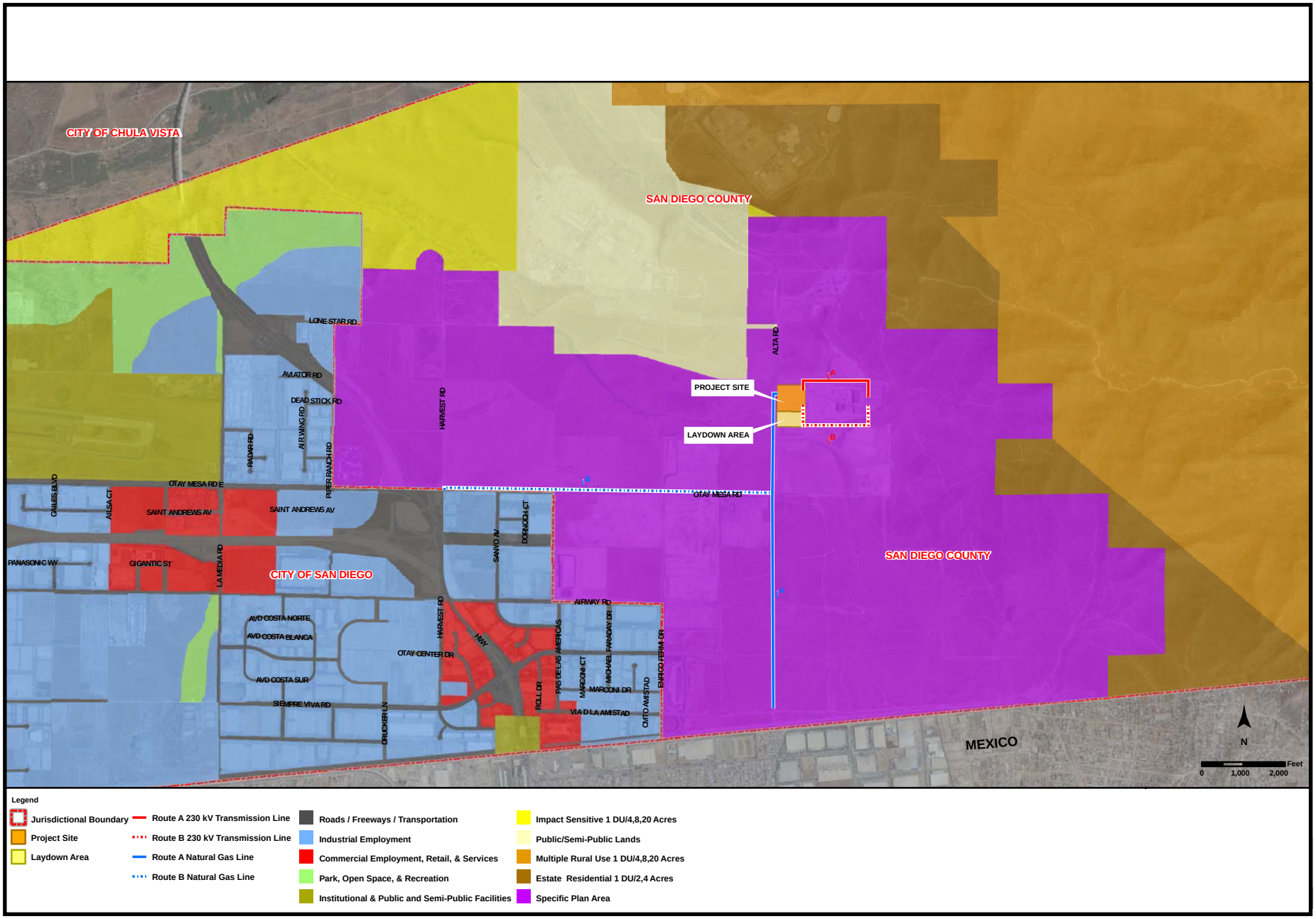
NOISE Table A4
OSHA Worker Noise Exposure Standards

Duration of Noise (Hrs/day)	A-Weighted Noise Level (dBA)
8.0	90
6.0	92
4.0	95
3.0	97
2.0	100
1.5	102
1.0	105
0.5	110
0.25	115

Source: 29 C.F.R. § 1910.

NOISE AND VIBRATION - FIGURE 1

Pio Pico Energy Center - Existing Land Use Surrounding Project Site



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 5.12-2

NOISE AND VIBRATION - FIGURE 2

Pio Pico Energy Center - Ambient Noise Measurement Locations



Legend

- Project Site
- Laydown Area
- Route A 230 kV Transmission Line
- Route B 230 kV Transmission Line
- Route A Natural Gas Line
- Route B Natural Gas Line
- Short-Term Monitoring Location
- Long-Term Monitoring Location

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 5.12-1

PUBLIC HEALTH

Obed Odoemelam, Ph.D.

SUMMARY OF CONCLUSIONS

Staff has analyzed the potential public health risks associated with construction and operation of the proposed Pio Pico Energy center (PPEC) and does not expect any significant adverse cancer or short- or long-term noncancer health effects from the project's toxic emissions. Staff's analysis of potential health impacts uses a highly conservative methodology that accounts for impacts on the most sensitive individuals in a given population, including newborns and infants. According to staff's assessment, emissions from PPEC would not contribute significantly to morbidity or mortality in any age or ethnic group residing in the project area.

INTRODUCTION

The purpose of this Preliminary Staff Assessment (PSA) is to determine if emissions of toxic air contaminants (TACs) from the proposed PPEC would have the potential to cause significant adverse public health impacts or to violate standards for public health protection. If potentially significant health impacts are identified, staff would identify and recommend mitigation measures as necessary to reduce such impacts to insignificant levels.

The California Energy Commission (Energy Commission) staff addresses the potential impacts of regulated or criteria air pollutants in the **Air Quality** section of this PSA, and assesses the public and worker health impacts from accidental releases of hazardous materials in the **Hazardous Materials Management** section. 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 into the public sewer system are discussed in the **Soil and Water Resources** section. Plant releases in the form of hazardous and nonhazardous wastes are described in the **Waste Management** section.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

PUBLIC HEALTH Table 1

Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
Federal	
Clean Air Act section 112 (Title 42, U.S. Code section 7412)	The National Emissions Standards for Hazardous Air Pollutants (NESHAP) requires new sources that emit more than 10 tons per year of any specified Hazardous Air Pollutant (HAP) or more than 25 tons per year of any combination of HAPs to apply Maximum Achievable Control Technology.
State	
California Health and Safety Code section 25249.5 et seq. (Proposition 65)	These sections establish thresholds of exposure to carcinogenic substances above which Prop 65 exposure warnings are required.
California Health and Safety Code section 41700	This section states that "no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property."
California Code of Regulations, Title 22, Section 60306	Requires that whenever a cooling system uses recycled water in conjunction with an air conditioning facility and a cooling tower that creates a mist that could come into contact with employees or members of the public, a drift eliminator shall be used and chlorine, or other, biocides shall be used to treat the cooling system re-circulating water to minimize the growth of Legionella and other micro-organisms.
California Public Resource Code section 25523(a); Title 20 California Code of Regulations (CCR) section 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 regulations require a quantitative health risk assessment for new or modified sources, including power plants that emit one or more toxic air contaminants (TACs).
Local	
San Diego County Air Pollution Control District	This rule states that no source shall cause injury, detriment, nuisance or annoyance to the public, which

(SDCAPCD) Rule 51	could endanger their comfort, repose, health and safety, or property.
SDCAPCD Rule 1200	This rule requires the use of Best Available Control Technology for Toxics (T-BACT) for major sources of emissions.
SDCAPCD Rule 1210	This rule implements the California Airborne Toxic Control Measures (ATCM).

SETTING

This section describes the environment in the vicinity of the proposed project site from the public health perspective. Characteristics of the natural environment, such as meteorology and terrain, affect a project's potential for impacts on public health. An emissions plume from a facility may 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 types of land use near a site would influence the surrounding population distribution and density, which, in turn, would affect public exposure to project emissions. Additional factors that could affect public health include existing air quality and environmental site contamination.

SITE AND VICINITY DESCRIPTION

As discussed by the applicant, Pio Pico Energy Center, LLC, in the Application for Certification (PPEC 2011a, pp. 5.9-1, 5.9-3, 5.9-4, and 5.16-2 through 5.16-4), the proposed project site is located near the western base of the San Ysidro Mountains at an elevation of approximately 635 feet above sea level. The terrain is generally flat to the west and south of the site meaning that there are no elevated locations with the potential for higher pollutant impacts than at lower elevations.

The proposed site is a 10-acre parcel of disturbed and developed land within an industrial area. It is located in the southeast quadrant of the intersection of Alta Road and Calzada de la Fuente. The area in the immediate vicinity is designated for heavy and mixed industrial uses, for business parks, and for habitat conservation. The area is generally rural with few rural residences the nearest of which are 0.8 miles to the south west of the boundary. The Richard J Donovan Correctional Facility is 0.8 miles northwest of the boundary. Sensitive receptors are individuals usually more susceptible than the general population to the effects of environmental pollutants. Extra consideration is given to the possible effects in such individuals in establishing exposure limits for environmental pollutants. However, there are no sensitive receptors within a three-mile radius of the site. The applicant identified the nearest of these receptors together with their respective distances from the site. These include schools, a day care center, and a medical center (PPEC 2011a, p. 5.16-4).

METEOROLOGY

Meteorological conditions, including wind speed, wind direction, and atmospheric stability, affect the extent to which pollutants are dispersed into ambient air as well as the direction of pollutant transport. This, in turn, affects the level of public exposure to

emitted pollutants and associated health risks. When wind speeds are low and the atmosphere is stable, for example, dispersion is reduced, and pockets of elevated exposures may result.

The climate at the project site is characterized by dry, warm summers and mild winters and is mostly influenced by the semi-permanent eastern Pacific high pressure system centered off the coast of California. In the summer, this high pressure system moves to its northernmost position, resulting in strong northwesterly winds and low precipitation. In the winter, the high pressure system moves southwestward toward Hawaii, allowing air flow from the Gulf of Alaska to reach northern California, bringing wind and rain (PPEC 2011a pp. 5.2-4 and 5.2-5).

Atmospheric stability relates to turbulence, or the ability of the atmosphere to disperse pollutants from convective air movement. Mixing heights (the height above ground level through which the air is well mixed and in which pollutants can be dispersed) are lower during mornings from temperature inversions and increase during the warmer afternoons. Staff's **Air Quality** section presents a more detailed discussion of the area's meteorological conditions and provides meteorological data.

EXISTING AIR QUALITY

The proposed project site is within the jurisdiction of the San Diego County Air Pollution Control District (SDCAPCD). By examining average toxic concentration levels from representative air monitoring sites with cancer risk factors specific to each identified carcinogen, a lifetime cancer risk could be calculated to provide a background risk level for inhalation of ambient air. It should be noted for comparison purposes, that the overall lifetime cancer risk for the average individual in the United States is about 1 in 3, or 333,000 in 1 million.

The nearest California Air resources Board (CARB) TAC monitoring station to the project site is in the City of Chula Vista, approximately 11 miles to the northwest. Although this station is in an urban setting, the applicant and staff consider the measured TAC concentrations as conservatively representative of the levels in the project area and serve to establish the upper-bound levels of toxic air contaminants as found in the project area. In 2007, the background cancer risk calculated by the California Air Resources Board (CARB) for this Chula Vista station was 102 in one million (CARB 2008). The pollutants 1, 3-butadiene and benzene, emitted primarily from mobile sources, together with carbon tetrachloride were identified as the three highest contributors to this background risk and together accounted for approximately 70 % of the total. The risk from 1, 3-butadiene was established as about 21 in one million, while the risk from benzene was estimated at about 25 in one million. Formaldehyde was shown to account for about 13 % of the total and is emitted directly from vehicles and other combustion sources, such as the proposed PPEC.

The use of reformulated gasoline, beginning in the second quarter of 1996, as well as other toxics reduction measures, have led to a marked decrease in the ambient levels of air toxics and associated cancer risk in all areas of California during the past few years. For example, in one large urban air district, the air toxics-related cancer risk from inhalation was estimated at 342 in one million based on 1992 data and at 161 in one million from the 2002 data (BAAQMD 2004, p. 12). Similar risk reductions have been

shown to occur throughout the state's major metropolitan areas. In comparison to these "background" risks from all stationary and mobile sources, the applicant estimated the theoretical maximum cancer risk for all emissions from the proposed PPEC to be 0.094 in one million, a value less than 1 % of the existing background cancer risk as estimated for the Chula Vista area.

EXISTING PUBLIC HEALTH CONCERNS

When evaluating a new project, staff attempts to assess the results of studies of the existing public health issues in the project vicinity. Such an assessment allows staff to identify the health status of the area as compared to similar areas in California. The disease rates of most concern are for respiratory diseases (including asthma) and cancer. Any specific data on childhood disease is particularly noted in each given case. Assessing existing health concerns in the project area provides staff with a basis on which to evaluate the significance of any additional health impacts from the proposed PPEC and to assess the adequacy of any proposed mitigation. The available studies suggest that there are specific effects from exposure to particulate matter from area traffic and other sources, especially in children with asthma, pointing to the necessity for continued county-wide reduction efforts. No cancer-specific health studies were identified for the population within a 6-mile radius of the project site (PPEC 2011a, pp. 5.16-4 and 5.16-5).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

The **PUBLIC HEALTH** section of this staff assessment discusses toxic emissions to which the public could be exposed during project construction and routine operation. Following the release of toxic contaminants into the air or water, people may come into contact with them through inhalation, dermal contact, or ingestion via contaminated food or water.

Air pollutants for which no ambient air quality standards have been established are known as noncriteria pollutants. Unlike criteria pollutants such as ozone, carbon monoxide, sulfur dioxide, or nitrogen dioxide, noncriteria pollutants have no ambient (outdoor) air quality standards that specify levels considered safe for everyone, including the most sensitive receptors.

Since noncriteria pollutants do not have such standards, a health risk assessment is used to determine if people might be exposed to those types of pollutants at unhealthy levels. The risk assessment consists of the following steps:

- identification of the types and amounts of hazardous substances that PPEC could emit to the environment;
- estimation of the worst-case concentrations of project emissions in the environment using dispersion modeling;
- estimation of the amounts of pollutants that people could be exposed to through inhalation, ingestion, and dermal contact; and

- characterization of the potential health risks by comparing worst-case exposure to safe standards based on known health effects.

Staff relies on the California Environmental Protection Agency (Cal/EPA) Office of Environmental Health Hazard Assessment (OEHHA) to identify contaminants that are known to the state to cause cancer or other noncancer toxicological endpoints and to calculate the toxicity and cancer potency factors of these contaminants. Staff also relies on the California Air Resources Board and the local air pollution control districts for data on toxic air contaminants and on the state Department of Public Health for information on the results of epidemiological investigations of pollutant impacts on 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 any given source, a screening-level risk assessment is initially performed using simplified assumptions that are intentionally biased toward protection of public health. That is, an analysis designed to overestimate public health impacts from exposure to project emissions. In reality, it is likely that the actual risks from the source in question would be much lower than the risks estimated from the screening-level assessment. The risks for 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 emissions rates for pollutants that could be emitted from the plant;
- assuming meteorological 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 locations where the pollutant concentrations are estimated to be the highest;
- assuming that an individual's exposure to cancer-causing agents occurs at the maximum impact level continuously for 70 years; and
- using health-based standards designed 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 may also emit certain substances that could present a health hazard from noninhalation pathways of exposure (OEHHA 2003, Tables 5.1, 6.3, 7.1). When these substances are present in facility emissions, the screening-level analysis would include the following additional exposure pathways: soil ingestion, dermal exposure, and mother's milk (OEHHA 2003, p. 5-3).

The risk assessment process addresses three categories of health impacts: acute (short-term) health effects, chronic (long-term) noncancer effects, and cancer risk (also long-term). Acute health effects result from short-term (one-hour) exposure to relatively high concentrations of pollutants. Acute effects are temporary in nature and include symptoms such as irritation of the eyes, skin, and respiratory tract.

Chronic health effects are those that arise as a result of long-term exposure to lower concentrations of pollutants. The exposure period is considered to be approximately from 12 % to 100 % of a lifetime, or from 8 to 70 years (OEHHA 2003, p. 6-5). Chronic health effects include diseases such as reduced lung function and heart disease.

The analysis for noncancer health effects compares the maximum project contaminant levels to safe levels called *Reference Exposure Levels*, or RELs. These are amounts of toxic substances to which even sensitive people could be exposed and suffer no adverse health effects (OEHHA 2003, p. 6-2). These exposure levels are designed to protect the previously noted sensitive individuals in the population, such as infants, the aged, and people suffering from illness or disease which makes them more sensitive to the effects of toxic substance exposure. The Reference Exposure Levels are based on the most sensitive adverse health effect reported in the medical and toxicological literature and include margins of safety. The margin of safety is used to addresses uncertainties associated with inconclusive scientific and technical information available at the time of standard setting and is meant to provide a reasonable degree of protection against hazards that research has not yet identified. The margin of safety is designed to prevent pollution levels that have been demonstrated to be harmful, as well as to prevent lower pollutant levels that may pose an unacceptable risk of harm, even if the risk is not precisely identified as to nature or degree. Health protection is assumed if the estimated worst-case exposure is below the relevant reference exposure level. In such a case, an adequate margin of safety would be assumed to exist between the predicted exposure and the estimated threshold dose for toxicity.

Exposure to multiple toxic substances may result in health effects that are equal to, less than, or greater than effects resulting from exposure to the individual chemicals. Only a small fraction of the thousands of potential combinations of chemicals have been tested for the health effects of combined exposures. In conformity with the California Air Pollution Control Officers Association (CAPCOA) guidelines, the health risk assessment 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 may be synergistic or antagonistic (where the effects are greater or less than the sum, respectively). For these types of substances, the health risk assessment could underestimate or overestimate the actual risks.

For carcinogenic substances, the health assessment considers the risk of developing cancer and assumes that continuous exposure to the cancer-causing substance would occur over a 70-year lifetime. The risk that is calculated is not meant to project the actual expected incidence of cancer, but is rather regarded as a theoretical upper-bound estimate based on worst-case assumptions.

Cancer risk is expressed in terms of chances per million of cancer and is a function of the maximum expected pollutant concentration, the probability that a particular pollutant would cause cancer (called *potency factors* and established by OEHHA), and the length of the exposure period. Cancer risks for individual carcinogens are added together to yield the total cancer risk from each potential source. The conservative nature of the screening-level assumptions means that actual cancer risks from project emissions would be considerably lower than estimated. If the screening-level analysis were to predict a risk below significant levels, further analysis would not be necessary.

However, if the risk estimates were to be above the significance level, then further analysis, using more realistic site-specific assumptions, would be performed to obtain a more accurate assessment of potential health risks.

Significance Criteria

The Energy Commission staff determines the health effects of exposure to toxic emissions based on 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 worst-case assumptions, as described above.

As described earlier, noncriteria pollutants are evaluated for short-term (acute) and long-term (chronic) noncancer health effects, as well as cancer (long-term) health effects. The significance of project health impacts is determined separately for each of the three categories.

Acute and Chronic Noncancer Health Effects

Staff assesses the significance of noncancer health effects by calculating a *hazard index*. A hazard index is a ratio comparing exposure from facility emissions to the reference (safe) exposure level. A ratio of less than 1.0 signifies that the worst-case exposure is below the safe level. The hazard index for every toxic substance that has the same type of health effect is added to yield a Total Hazard Index. The Total Hazard Index is calculated separately for acute and chronic effects. A Total Hazard Index of less than 1.0 indicates that cumulative worst-case exposures are less than the reference exposure levels. Under these conditions, health protection from the project is likely to be achieved, even for sensitive members of the population. In such a case, staff would presume that there would be no significant noncancer project-related public health impacts.

Cancer Risk

Staff relied 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 to determine a cancer risk significance level. Title 22, California Code of Regulations section 12703(b) states that “the risk level which represents no significant risk shall be one which is calculated to result in one excess case of cancer in an exposed population of 100,000, assuming lifetime exposure.” This level of risk is equivalent to a cancer risk of 10 in one million, which is also written as 10×10^{-6}. An important distinction is that the Proposition 65 significance level applies separately to each cancer-causing substance, whereas staff determines significance based on the cumulative risk from all cancer-causing chemicals. Thus, the manner in which the significance level is applied by staff is more conservative (health-protective) than that applied by Proposition 65. The significant risk level of 10 in one million is consistent with the level of significance adopted by many air districts. In general, these air districts would not approve a project with a cancer risk exceeding 10 in one million. The SDCAPCDD also uses 10 in one million as the level of “Significant Health Risk” (PPEC 2011a, p.5.16-8).

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

can be ensured. Staff's analysis also addresses potential impacts on all members of the population including the young, the elderly, individuals with existing medical conditions that may make 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 airborne toxics. When a screening analysis shows cancer risks to be above the significance level, refined assumptions would likely result in a lower, more realistic risk estimate. If using refined assumptions, the potential risk from a proposed facility were found to exceed the significance level of 10 in one million, staff would require appropriate mitigation measures to reduce the risk to less than significant. If, after all risk reduction measures had been considered, a refined analysis still identifies a cancer risk as greater than 10 in one million, staff would deem such risk to be significant and would not recommend project approval.

DIRECT/INDIRECT IMPACTS AND MITIGATION

CONSTRUCTION IMPACTS AND MITIGATION

Potential risks to public health during construction may be associated with exposure to toxic substances in contaminated soil disturbed during site preparation, as well as diesel exhaust from heavy equipment operation. Criteria pollutant impacts from the operation of heavy equipment and particulate matter from earth moving are examined in staff's **Air Quality** analysis.

Site disturbances occur during facility construction from excavation, grading, and earth moving. Such activities have the potential to adversely affect public health through various mechanisms, such as the creation of airborne dust, material being carried off site through soil erosion, and uncovering buried hazardous substances. The Phase I Environmental Site Assessment conducted for this site in 2010 identified no "Recognized Environmental Conditions" per the American Society for Testing and Materials Standards (ASTM) definition. That is, there was no evidence or record of any use, spillage or disposal of hazardous substances on the site, nor any other environmental concern that would require remedial action (PPEC 2011a, p. 5.14-1 and Appendix Q). Staff does not expect any toxic exposures from construction activities. The conditions for handling and disposing of construction- and operations-related wastes are specified in the **Waste Management** section.

The operation of construction equipment will result in air emissions from diesel-fueled engines. Diesel emissions are generated from sources such as trucks, graders, cranes, welding machines, electric generators, air compressors, and water pumps. Although diesel exhaust contains criteria pollutants such as nitrogen oxides, carbon monoxide, and sulfur oxides, it also includes a complex mixture of thousands of gases and fine particles. These particles are primarily composed of aggregates of spherical carbon particles coated with organic and inorganic substances. Diesel exhaust contains over 40 substances that are listed by the U.S. Environmental Protection Agency (U.S. EPA) as hazardous air pollutants and by the California Air Resources Board (ARB) as toxic air contaminants.

Exposure to diesel exhaust may cause both short- and long-term adverse health effects. Short-term effects can include increased coughing, labored breathing, chest tightness, wheezing, and eye and nasal irritation. Long-term effects can include increased coughing, chronic bronchitis, reductions in lung function, and inflammation of the lung. Epidemiological studies also strongly suggest a causal relationship between occupational diesel exhaust exposure and lung cancer.

Based on a number of health effects studies, the Scientific Review Panel on Toxic Air Contaminants recommended a chronic reference exposure level (see discussion of reference exposure levels in Method of Analysis section above) for diesel exhaust particulate matter of 5 micrograms of diesel particulate matter per cubic meter of air ($\mu g/m^3$) and a cancer unit risk factor of $3x10^{-4}$ $(\mu g/m^3)^{-1}$ (SRP 1998, p. 6).[1] The Scientific Review Panel did not recommend a value for an acute Reference Exposure Level since available data in support of a value was deemed insufficient. On August 27, 1998, ARB listed particulate emissions from diesel-fueled engines as a toxic air contaminant and approved the panel's recommendations regarding health effect levels.

Appendices P and G of the AFC (PPEC 2011a) present estimates of the maximum daily emissions for onsite construction activities, total off-site emissions for construction of the gas pipeline, and total emissions from construction traffic. Construction of the entire project including linear facilities is anticipated to take place over a period of 16 months (PPEC 2010a, p5.2-36). As noted earlier, assessment of chronic (long-term) health effects assumes continuous exposure to toxic substances over a significantly longer time period, typically from 8 to 70 years. Because of the relatively short duration of construction for this project, health risks from construction emissions are not expected.

Mitigation measures are proposed in the **Air Quality** section by Energy Commission staff to reduce the emission of PM10 and PM2.5. These include the use of extensive fugitive dust control measures. In order to further mitigate potential impacts from particulate matter emissions during the operation of diesel-powered construction equipment of 50 horsepower and larger, Energy Commission staff recommends the use of ultra-low sulfur diesel fuel and Tier 3 or Tier 2 California Emission Standards for Off-Road Compression-Ignition Engines or the installation of an oxidation catalyst and soot filters on diesel equipment. The catalyzed diesel particulate filters are passive, self-regenerating filters that reduce particulate matter, carbon monoxide, and hydrocarbon emissions through catalytic oxidation and filtration. The degree of particulate matter reduction is comparable for both mitigation measures. Such filters will reduce diesel emissions during construction and reduce any potential for significant health impacts.

OPERATION IMPACTS AND MITIGATION

Emissions Sources

The potential sources of toxic emissions from the proposed PPEC are the three natural gas fueled simple-cycle combustion turbine generators, a hybrid dry/wet cooling system, two natural gas-fired black start engines, and a diesel firewater pump engine. The sources of emissions at potentially significant levels are the three natural gas turbine

generators. As noted earlier, the first step in a health risk assessment is to identify potentially toxic compounds that may be emitted from the facility.

Table 5.16-3 of the AFC (PPEC 2011a) lists the toxic air contaminants expected to be emitted from all project sources as combustion byproducts along with their anticipated amounts (emission factors). Toxic Air Contaminant emission factors were obtained from the Environmental Protection Agency (EPA) AP-42 database of emission factors. Table 5.16-4 of the AFC lists the toxicity values used to characterize cancer and noncancer health impacts from project pollutants. The toxicity values include Reference Exposure Levels, which are used to calculate short-term and long-term noncancer health effects, and cancer unit risks, which are used to calculate the lifetime risk of developing cancer, as published in the OEHHA Guidelines (OEHHA 2003). **PUBLIC HEALTH Table 2** lists the toxic emissions potentially emitted by PPEC and shows how each contributes to the health risk analysis.

Emissions Levels

Once potential emissions are identified, the next step is to quantify them by conducting a "worst case" analysis. Maximum hourly emissions are required to calculate acute (one-hour) noncancer health effects, while estimates of maximum emissions on an annual basis are required to calculate cancer and chronic (long-term) noncancer health effects.

The next step in the health risk assessment process is to estimate the ambient concentrations of toxic substances. This is accomplished by using a screening air dispersion model and assuming conditions that result in maximum impacts. The applicant's screening analysis was performed using the ARB/OEHHA Hotspots Analysis and Reporting Program (HARP). Ambient concentrations were used in conjunction with Reference Exposure Levels and cancer unit risk factors to estimate health effects that might occur from exposure to facility emissions. Exposure pathways, or ways in which people might come into contact with toxic substances, include inhalation, dermal (through the skin) absorption, soil ingestion, consumption of locally grown plant foods, and mother's milk.

The applicant followed the above method of assessing health effects as is consistent with OEHHA's Air Toxics Hot Spots Program Risk Assessment Guidelines (OEHHA, 2003) referred to earlier.

PUBLIC HEALTH Table 2

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			✔	✔	✔
Benzo(a)anthracene			✔		
Benzo(a)pyrene			✔		
Benzo(b)fluoranthene			✔		
Benzo(k)fluoranthene			✔		
1,3-Butadiene			✔	✔	
Chrysene			✔		
Dibenz(a,h)anthracene			✔		
Diesel Exhaust (PM10)			✔	✔	
Ethylbenzene			✔	✔	
Formaldehyde			✔	✔	✔
Hexane				✔	
Indenol(1,2,3-cd)anthracene			✔		
Napthalene		✔	✔	✔	
Propylene				✔	
Propylene oxide			✔	✔	✔
Toluene				✔	✔
Xylene				✔	✔

Source: OEHHA 2003, Appendix L and OGE 2008a, Table 6.16-1

Impacts

The applicant's screening health risk assessment for the project resulted in a maximum acute Hazard Index (HI) of 0.034 and a maximum chronic HI of 0.011. As **PUBLIC HEALTH Table 3** shows, the chronic and acute health indices at the points of maximum impacts are both less than 1.0 indicating that no long-term or short-term adverse health effects would be likely from operations. As shown in **PUBLIC HEALTH Table 3**, total worst-case individual cancer risk was calculated by the applicant to be 0.094 in 1 million at the location of maximum impact. This risk estimate is much below staff's significance level of 10 in one million establishing that any project-related cancer risks would be at levels that would be less than significant. Staff is in agreement with the applicant's assessment approach. The results from this assessment (summarized in staff's **PUBLIC HEALTH TABLE 3**) were provided to staff along with documentation of the assumptions used (PPEC 2011a, pp.5.16-6 through 5.16-14 and Appendix P).

Staff has found these assumptions to be acceptable for use in this analysis and has validated the applicant's findings with regard to the numerical public health risk estimates expressed either in terms of the hazard index for each non-carcinogenic pollutant, or cancer risks for estimated levels of the carcinogenic pollutants.

PUBLIC HEALTH Table 3

Operation Hazard/Risk at Point of Maximum Impact: Applicant Assessment

Type of Hazard/Risk	Hazard Index/Risk	Significance Level	Significant?
Acute Noncancer	0.034	1.0	No
Chronic Noncancer	0.011	1.0	No
Individual Cancer	0.094 in a million	10.0 in a million	No

Source: PPEC 2010a, Table 5.16-5.

Cooling Tower

In addition to project TAC emissions, bacterial growth in the proposed partial dry-cooling system could include the Legionella bacterium which could present a public health risk. Legionella is a bacterium that is ubiquitous in natural aquatic environments and is also widely distributed in man-made water systems. It is the principal cause of legionellosis, otherwise known as Legionnaires' disease, which is similar to pneumonia. Transmission to people results mainly from inhalation or aspiration of aerosolized contaminated water. Untreated or inadequately treated cooling systems, such as industrial cooling towers and building heating, ventilating, and air conditioning systems, have been correlated with outbreaks of legionellosis.

Legionella can grow symbiotically with other bacteria and can infect protozoan hosts. This provides Legionella with protection from adverse environmental conditions, including making it more resistant to water treatment with chlorine, biocides, and other disinfectants. Thus, if not properly maintained, cooling water systems and their components can amplify and disseminate aerosols containing Legionella.

As noted in the LORS section above, the State of California regulates recycled water for use in cooling towers in Title 22, Section 60303, California Code of Regulations. This section requires that, in order to protect workers and the public who may come into contact with cooling tower mists, chlorine or another biocide must be used to treat the cooling system water to minimize the growth of Legionella and other micro-organisms. This regulation applies to PPEC since it intends to use tertiary-treated recycled water provided by the Otay Water District for cooling (PPEC 2011a, pp. 5.5-10 through 5.5-14).

The U.S. EPA published an extensive review of Legionella in a human health criteria document (EPA 1999). The U.S. EPA noted that Legionella may propagate in biofilms (collections of microorganisms surrounded by slime they secrete, attached to either inert or living surfaces) and that aerosol-generating systems such as cooling towers can aid

in the transmission of Legionella from water to air. The U.S. EPA has inadequate quantitative data on the infectivity of Legionella in humans to prepare a dose-response evaluation. Therefore, sufficient information is not available to support a quantitative characterization of the threshold infective dose of Legionella. Thus, the presence of even small numbers of Legionella bacteria presents a risk - however small - of disease in humans.

In February of 2000 the Cooling Technology Institute (CTI) issued its own report and guidelines for the best practices for control of Legionella (CTI 2000). The CTI found that 40-60 % of industrial cooling towers tested were found to contain Legionella. More recently, staff has received a 2005 report of testing in cooling towers in Australia that found the rate of Legionella presence in cooling tower waters to be extremely low, approximately 3 to 6 %. The cooling towers all had implemented aggressive water treatment and biocide application programs similar to that required by proposed condition of certification **Public Health-1**.

To minimize the risk from Legionella, the CTI noted that consensus recommendations included minimization of water stagnation, minimization of process leads into the cooling system that provide nutrients for bacteria, maintenance of overall system cleanliness, the application of scale and corrosion inhibitors as appropriate, the use of high-efficiency mist eliminators on cooling towers, and the overall general control of microbiological populations.

Good preventive maintenance is very important in the efficient operation of cooling towers and other evaporative equipment (ASHRAE 1998). Preventive maintenance includes having effective drift eliminators, periodically cleaning the system if appropriate, maintaining mechanical components in working order, and maintaining an effective water treatment program with appropriate biocide concentrations. Staff notes that most water treatment programs are designed to minimize scale, corrosion, and biofouling and not to control Legionella.

The efficacy of any biocide in ensuring that bacterial and in particular Legionella growth, is kept to a minimum is contingent upon a number of factors including but not limited to proper dosage amounts, appropriate application procedures and effective monitoring.

In order to ensure that Legionella growth is kept to a minimum, thereby protecting both nearby workers as well as members of the public, staff has proposed Condition of Certification **Public Health-1**. The condition would require the project owner to prepare and implement a biocide and anti-biofilm agent monitoring program to ensure that proper levels of biocide and other agents are maintained within the cooling tower water at all times, that periodic measurements of Legionella levels are conducted, and that periodic cleaning is conducted to remove bio-film buildup. In addition, the Air Quality section of this document requires use of highly efficient drift eliminators. Staff believes that with the use of an aggressive antibacterial program coupled with routine monitoring and biofilm removal, the chances of Legionella growing and dispersing would be reduced to insignificance.

CUMULATIVE IMPACTS

The applicant has contacted the SDCAPCD for a list of all newly permitted sources, or other sources that are reasonable anticipated in the near future within a six-mile radius of PPEC. SDCAPCD indicated that all such projects will have emissions below their specified thresholds for significance.

As described above, the contribution of the PPEC to both cancer risk and chronic and acute noncancer disease are comparatively very small. Even in a cumulative context including other regional sources, the estimates for cancer risk from the PPEC project would be less than significant. Its contribution to area health impacts would thus be less than significant in a cumulative context.

COMPLIANCE WITH LORS

Staff has considered the minority population as identified in **Socioeconomics Figure 1** in its impact analysis and has found no potential significant adverse impacts for any receptors, including environmental justice populations. 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 toward the 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—will not experience any acute or chronic significant health risk or any significant cancer risk as a result of that exposure. Staff believes that it 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 to any population in the area. Therefore, given the absence of any significant health impacts, there are no disparate health impacts or environmental justice issues associated with the proposed project.

Staff concludes that construction and operation of the PPEC would be in compliance with all applicable LORS regarding long-term and short-term project impacts in the area.

CONCLUSIONS

Staff has analyzed potential public health risks associated with construction and operation of the PPEC and does not expect any significant adverse cancer, short-term, or long-term health effects to any members of the public, including low income and minority populations, from project toxic emissions. Staff also concludes that its analysis of potential health impacts from the proposed PPEC uses a highly conservative methodology that accounts for impacts on the most sensitive individuals in a given population, including newborns and infants. According to the results of staff's health risk assessment, emissions from PPEC 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

Public Health-1 The project owner shall develop and implement a Cooling Water Management Plan to ensure that the potential for bacterial growth in cooling water is kept to a minimum. The Plan shall be consistent with either staff's "Cooling Water Management Program Guidelines" or with the Cooling Technology Institute's "Best Practices for Control of Legionella" guidelines but in either case, the Plan must include sampling and testing for the presence of Legionella bacteria at least every six months. After two years of power plant operations, the project owner may ask the CPM to re-evaluate and revise the Legionella bacteria testing requirement.

Verification: At least 60 days prior to the commencement of cooling tower operations, the Cooling Water Management Plan shall be provided to the CPM for review and approval.

REFERENCES

American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) 1998. Legionellosis: Position Paper. June 25.

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SOCIOECONOMICS

Lisa Worrall

SUMMARY OF CONCLUSIONS

Energy Commission staff concludes that construction and operation of the Pio Pico Energy Center (PPEC) would not cause significant direct, indirect, or cumulative adverse socioeconomic impacts on the project area's housing, schools, law enforcement, emergency medical services, and parks, and therefore would have no socioeconomic impact on the environmental justice population identified in **Socioeconomics Figure 1**. Staff also concludes that the project would not induce substantial population growth or displacement of population, or induce substantial increases in demand for housing or public services. Staff-proposed Conditions of Certification **SOCIO-1** and **SOCIO-2** would ensure project compliance with state and local laws, ordinances, regulations, and standards (LORS).

INTRODUCTION

Staff's socioeconomics impact analysis evaluates the project's induced changes on existing population, employment patterns, and community services. Staff discusses the estimated impacts of the construction and operation of the PPEC on local communities, community resources, and public services, and provides a discussion of the estimated beneficial economic impacts of the construction and operation of the proposed project.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Socioeconomics Table 1 contains socioeconomics laws, ordinances, regulations, and standards (LORS) applicable to the proposed project.

SOCIOECONOMICS Table 1

Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
State	
California Education Code, Section 17620	The governing board of any school district is authorized to levy a fee, charge, dedication, or other requirement for the purpose of funding the construction or reconstruction of school facilities.
California Government Code, Sections 65996-65997	Except for a fee, charge, dedication, or other requirement authorized under Section 17620 of the Education Code, state and local public agencies may not impose fees, charges, or other financial requirements to offset the cost for school facilities.
Local	
San Diego County General Plan (2011), Chapter 7 Safety Element, Policy S-6.3 Funding Fire Protection Services.	Requires development to contribute its fair share towards funding the provision of appropriate fire and emergency medical services as determined necessary to adequately serve the project.
East Otay Mesa Business Park Specific Plan, Public Facilities Element, Policy F-7	Property owners in East Otay Mesa are required to contribute their fair share toward financing a sheriff substation. In 2009, property owners in East Otay Mesa formed a Community Facilities District (Number 09-1) for the purposes of constructing interim and permanent sheriff stations in East Otay Mesa.
San Diego County Code of Regulatory Ordinances, Section 810.311	Fire Mitigation Fee Ordinance. Prior to the issuance of any building permit or other permit for development the applicant shall pay to the Director the fees prescribed by fire agency resolution, or shall present written evidence that the provisions of this chapter have otherwise been satisfied with respect to the development for which permits are sought.

SETTING

The proposed PPEC is located at the southeast quadrant of the intersection of Alta Road and Calzada De La Fuente, in an unincorporated area of southwestern San Diego County. The project site is adjacent to the existing Otay Mesa Generating Project (a natural gas-fired power plant). Land near the proposed project is designated for industrial, commercial, and residential uses, with industrial uses representing the majority.

With a population just over 3 million in 2010 and forecast to grow approximately 28 % by 2050, San Diego County has a large pool of skilled workers within commuting distance of the project site (SANDAG 2011). Adjacent Riverside, Orange, and Imperial counties are also home to large populations of skilled workforce (EDD 2010).

For the purposes of assessing project impacts, staff defines the "local workforce" during project construction as residing within a two-hour commute of the project. This includes San Diego-Carlsbad-San Marcos Metropolitan Statistical Area (MSA) and parts of Riverside-San Bernardino-Ontario MSA. Based on the Electric Power Research Institute's (EPRI's) report, *Socioeconomic Impacts of Power Plants*, construction workers will commute as much as two hours to construction sites from their homes and one hour during operations, rather than relocate (EPRI 1982). In an attempt to update information on construction workers' commute practices, staff had several discussions with Tom Lemmon, Business Manager with the San Diego County Building and Construction Trades Council who confirmed construction workers generally spend 2+ hours on a one-way commute to the job site. Mr. Lemmon indicated for the Pio Pico project, workers would come from as far north as Riverside County and to the east from Imperial County (SDBTC 2011a). Workers living beyond Riverside County would be more likely to seek lodging closer to the project site and are represented in the El Centro MSA and Santa Ana-Anaheim-Irvine MSA.

The "local workforce" during project operation is defined as residing within a one-hour commute of the project and would likely come from San Diego County. Staff defines the study area related to project impacts on population and housing, as including unincorporated San Diego County and the cities of Chula Vista, Imperial Beach, San Diego, and National City. The study area for indirect and induced economic impacts is defined as including San Diego County. The study area for environmental justice and recreation impacts is within a six-mile radius of the project site.

USING THE 2010 US CENSUS AND US CENSUS BUREAU'S AMERICAN COMMUNITY SURVEY IN STAFF ASSESSMENTS

The detailed social, economic, and housing information previously collected only in the decennial census was not collected for the 2010 Census (US Census 2011a). This information is now collected through the U.S. Census Bureau's American Community Survey (ACS). Decennial census data is a 100 % count collected once every ten years and represents information from a single reference point (April 1st). The main function of the decennial census is to provide *counts* of people for the purpose of congressional apportionment and legislative redistricting. ACS estimates are collected from a sample of the population based on information compiled continually and aggregated into one, three, and five-year estimates ("period estimates") released every year. The primary purpose of the ACS is to measure the changing social and economic *characteristics* of the U.S. population. As a result, the ACS does not provide official counts of the population in between censuses. Instead, the Census Bureau's Population Estimates Program will continue to be the official source for annual population totals, by age, race, Hispanic origin, and sex.

ACS collects data at every geography level from the largest level (nation) to the smallest level available (block group[1]).

Census Bureau staff recommends the use of data no smaller than the Census tract[2] level. [3] Data from the five-year estimates is used for our analysis as it provides the greatest detail at the smallest geographic level. Because ACS estimates come from a sample population, a certain level of variability is associated with these estimates. This variability is expressed as a margin of error (MOE). The MOE is used to calculate the coefficient of variation (CV). CVs are a standardized indicator of the reliability of an estimate. While not a set rule, the US Census Bureau considers the use of estimates with a CV more than 15 % cause for caution when interpreting patterns in the data (US Census 2009a). In situations where CVs for estimates are high, the reliability of estimates improves by aggregating the estimates to a larger geographic area. When projects are proposed in remote locations, there may be very little population within a six-mile radius of the project site. In these cases, the sample size would most likely be too small to yield estimates with a reasonable CV. Staff would need to expand the study area to include a large enough population that would yield a lower CV.

PROJECT-SPECIFIC DEMOGRAPHIC SCREENING

Staff's demographic screening is designed to determine the existence of a minority or below-poverty-level population or both within a six-mile area of the proposed project site. The demographic screening process 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). Due to the change in the sources and methods of collection used by the U.S. Census Bureau, the screening process relies on Year 2010 U.S. Census data to determine the number of minority populations and data from the 2006-2010 ACS to calculate the population below-poverty-level. Staff determined the 2006-2010 ACS data at the tract level is appropriate to use for the PPEC because the estimates yielded a reasonable CV.

[1] Census Block Group - A statistical subdivision of a census tract. A BG consists of all tabulation blocks whose numbers begin with the same digit in a census tract; for example, for Census 2000, BG 3 within a census tract includes all blocks numbered between 3000 and 3999. The block group is the lowest-level geographic entity for which the Census Bureau tabulates sample data from the decennial census. http://www.census.gov/dmd/www/glossary.html.

[2] Census Tract - A small, relatively permanent statistical subdivision of a county or statistically equivalent entity, delineated for data presentation purposes by a local group of census data users or the geographic staff of a regional census center in accordance with Census Bureau guidelines. Designed to be relatively homogeneous units with respect to population characteristics, economic status, and living conditions at the time they are established, census tracts generally contain between 1,000 and 8,000 people, with an optimum size of 4,000 people. Census tract boundaries are delineated with the intention of being stable over many decades, so they generally follow relatively permanent visible features. http://www.census.gov/dmd/www/glossary.html.

[3] Census Workshop: Using the American Community Survey (ACS) and The New American Factfinder (AFF) hosted by Sacramento Area Council of Governments on May 11 & 12, 2011. Workshop presented by Barbara Ferry, U.S. Census Partnership Data Services Specialist.

The Richard J. Donovan Correctional Facility and East Mesa Detention Complex are located within the East Otay Mesa area, within census tract 213.02 and within the six-mile radius of the project site (SD County 2011d). The East Mesa Detention Complex is home to four San Diego County-run detention centers and one privately run federal detention center. Populations in these group quarters are included in the 2010 U.S. Census.

Minority Populations

According to *Environmental Justice: Guidance Under the National Environmental Policy Act*, minority individuals are defined as members of the following groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. A minority population is identified when the minority population of the potentially affected area is greater than 50 % or when one or more U.S. Census blocks in the potentially affected area have a minority population greater than 50 %. For the PPEC project, the 2010 Census shows the total population within the six-mile radius of the proposed site is 67,796 persons, with a minority population of 54,375 persons, or about 80 % of the total population (US Census 2010a). (See **Socioeconomics Figure 1**). The population identified in the six-mile radius lives within unincorporated San Diego County, and the cities of Chula Vista and San Diego. **Socioeconomics Table 2** presents the minority population data for the six-mile radius plus San Diego County, City of Chula Vista, and City of San Diego for reference purposes.

SOCIOECONOMICS Table 2

Minority Populations within the Project Area

	Six-mile Radius of Project Site	San Diego County	Chula Vista city	San Diego city
Total:	67,796	3,095,313	243,916	1,307,402
Not Hispanic or Latino: White alone	13,421	1,500,047	49,641	589,702
Minority	54,375	1,595,266	194,275	717,700
Percent Minority	80	52	80	55
Source: US Census 2010a.				

Below-Poverty-Level-Populations

Staff also identified the below-poverty-level population based on 2006-2010 American Community Survey 5-year Estimates from the U.S. Census for tracts within a six-mile radius of the project site[4] (US Census 2010b). Poverty status excludes institutionalized people, people in military quarters, people in college dormitories, and unrelated individuals under 15 years old. Within a six-mile radius of the PPEC, approximately 6 %, or approximately 5,191 people[5], live below the poverty threshold.[6] **Socioeconomics**

[4] Staff determined that data at the census tract level would be used for this analysis, as it is the smallest geographic area available that retains reasonable accuracy. The data represents a period estimate, meaning the numbers represent an area's characteristics for the specified time period.

[5] 5,191 with an MOE of ±1,051 and a CV of 12.31. When a CV is 15 or less the Census Bureau considers the estimate fairly precise (US Census 2009a).

[6] ACS estimates for the tracts within a six-mile radius of the project site were aggregated using the ACS calculator at the Oklahoma Department of Commerce, consistent with instructions received during the May 11 & 12, 2011 Census Workshop (see footnote 3, above for more information).

Table 3 presents poverty data for the six-mile radius, plus San Diego County, City of Chula Vista, and City of San Diego for reference purposes.

SOCIOECONOMICS Table 3

Poverty Data within the Project Area

Area	Total			Income in the past 12 months below poverty level			Percent below poverty level	
	Estimate*	MOE	CV	Estimate	MOE	CV	Estimate	MOE
Six-mile Radius of Project Site	91,292	±2,367	1.58	5,191	±1,051	12.31	5.69	±1.1
San Diego County	2,930,875	±4,328	0.09	361,248	±8,531	1.44	12.30	±0.3
Chula Vista city	227,215	±1,161	0.31	21,740	±2,440	6.82	9.60	±1.1
San Diego city	1,239,411	±3,041	0.15	174,763	±4,914	1.71	14.10	±0.4
Notes:* Population for whom poverty status is determined. Source: US Census 2010b.								

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

CEQA requires a list of criteria to determine the significance of identified impacts. A significant impact is defined by CEQA as “a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project” (State CEQA Guidelines Section 15382).

Thresholds serve as the benchmark for determining if a project will result in a significant adverse impact when evaluated against existing conditions (e.g., "baseline" conditions). CEQA and the State CEQA Guidelines do not provide specific, quantifiable thresholds of significance for socioeconomic impact determinations. To the contrary, State CEQA Guideline Section 15064(e) specifies that: "[e]conomic and social changes resulting from the project shall not be treated as significant effects on the environment." However, Section 15064(e) continues by stating that when "a physical change is caused by economic or social effects of a project, the physical change may be regarded as a significant effect in the same manner as any other physical change resulting from the project. Alternatively, economic and social effects of a physical change may be used to determine that the physical change is a significant effect on the environment. If the physical change causes adverse economic or social effects on people, those adverse effects may be used as a factor in determining whether the physical change is significant. For example, if a project would cause overcrowding of a public facility and the overcrowding causes an adverse effect on people, the overcrowding would be regarded as a significant effect." In lieu of specific thresholds of significance for socioeconomic impacts under CEQA, staff has used Appendix G of the State CEQA Guidelines for this analysis, which specifies that a project could have a significant effect on population, housing, and public services if it would:

- Induce substantial population growth in an area, either directly or indirectly.

- Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.
- Displace substantial numbers of people, necessitating construction of replacement housing elsewhere.
- Result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:
    - Emergency medical services
    - Police protection
    - Schools
    - Parks
- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.
- Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

Staff's assessment of impacts on population, housing, emergency medical services, police protection, schools, and parks and recreation are based on professional judgments, input from local and state agencies, and the industry-accepted two-hour commute range[7] for construction workers and one-hour commute range for operational workers. Criteria for subject areas such as utilities, fire protection, water supply, and wastewater disposal are analyzed in the **Reliability**, **Worker Safety and Fire Protection**, and **Water Resources** sections of this document.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Induce Substantial Population Growth

For the purpose of this analysis, staff defines "induce substantial population growth" as workers permanently moving into the project area because of project construction and operation, thereby encouraging construction of new homes or extension of roads or other infrastructure. To determine whether the project would induce population growth, staff analyzes the availability of the local workforce and the population within the region. Staff defines "local workforce" for project construction as those workers residing within a two-hour commute of the project site. This area includes San Diego-Carlsbad-San Marcos Metropolitan Statistical Area (MSA[8]), Riverside-San Bernardino-Ontario MSA,

[7] Based on the Electric Power Research Institute's (EPRI's) report, *Socioeconomic Impacts of Power Plants*, construction workers will commute as much as two hours to construction sites from their homes and one hour during operations, rather than relocate (EPRI 1982).

[8] An MSA contains a core urban area population of 50,000 or more, consists of one or more counties, and includes the counties containing the core urban area, as well as any adjacent counties that have a high degree of social and economic integration (as measured by commuting to work) with the urban core.

El Centro MSA, and Santa Ana-Anaheim-Irvine MSA (San Diego, Imperial, Riverside, Orange, and San Bernardino counties). Workers residing in these MSAs with greater than a two-hour commute would be considered non-local and would likely seek lodging during construction closer to the project site. Staff defines "local workforce" for project operation as workers residing within a one-hour commute of the project.

Socioeconomics Table 4 shows the historical and projected populations for San Diego County including unincorporated San Diego County and the cities of Chula Vista, San Diego, Imperial Beach, and National City. As the data below shows, the three most populated areas within San Diego County are the City of San Diego, the unincorporated area of San Diego, and the City of Chula Vista.

Socioeconomics Table 4

Historical and Projected Populations

Area	Population						
	2010[1]	2020[2]	2030[2]	2040[2]	2050[2]	2010-2050	Percent Growth
City of Chula Vista	243,916	267,427	289,044	317,583	330,381	86,465	26.17
City of San Diego	1,307,402	1,542,528	1,689,254	1,816,924	1,945,569	638,167	32.80
Imperial Beach	26,324	28,230	30,574	33,089	36,198	9,874	27.28
National City	58,582	62,300	69,306	78,715	90,070	31,488	34.96
Unincorporated San Diego County	486,604	545,290	616,829	558,401	694,464	207,860	29.93
San Diego County	3,095,313	3,466,406	3,796,948	4,088,296	4,308,208	1,212,895	28.15

Source: [1] CA DOF 2011, [2]SANDAG 2010.

Baja California is south of the project site and within a six mile radius of the site and in the country of Mexico. Baja California is approximately 28,000 square miles in area and the Municipality of Tijuana has an area of approximately 476 square miles. The Municipality of Tijuana is in the north of Baja California and the population in 2010 was 1,559,683 (INEGI 2010). The population in the state of Baja California in 2010 was 3,155,070 (INEGI 2010). Staff did not do a screening analysis of the Mexican population in Baja California or Tijuana, as the United States Environmental Protection Guidelines on Environmental Justice and Title VI apply only to the United States.

Socioeconomics Table 5 shows the total labor by skill for the San Diego-Carlsbad-San Marcos MSA, Riverside-San Bernardino-Ontario MSA, El Centro MSA, and Santa Ana-Anaheim-Irvine MSA would be more than adequate to provide construction labor for the proposed project.

The applicant estimates construction (from site preparation and grading to commercial operation) would take approximately 16 months with construction beginning February 2013, commissioning and initial startup beginning March 2014, and commercial operation beginning May 2014, if the project is approved. Full-scale commercial operation is contractually obligated to commence by May 27, 2014 (PPEC 2011a, Section 2.0 Project Objectives, pg. 2-3). As shown in Table 5.10-5 in the AFC, the

number of workers would range from a high of 284 workers in the eighth month to a low of 29 in the sixteenth month. The average number of workers onsite for the 16-month period would be approximately 148. The applicant estimates the maximum non-local workers (excluding management staff) would be 5 % (PPEC 2011a, Section 5.10 Socioeconomics, pg. 5.10-8).

SOCIOECONOMICS Table 5

Total Labor by Skill in the San Diego-Carlsbad-San Marcos MSA, Riverside-San Bernardino-Ontario MSA, El Centro MSA, and Santa Ana-Anaheim-Irvine MSA (2008-2018)

	TRADE												
	Boilermaker	Carpenter/ Cement Finisher	Electrician	Insulation Worker	Ironworker	Laborer	Millwright	Operating Engineer	Painter	Pipefitter	Sheet Metal Worker	Surveyor	Teamster
San Diego-Carlsbad-San Marcos MSA													
Total Workforce, 2008	65,840 [1]	12,170 / 1,640 [2]	7,270	310 [3]	390 [4]	12,830	12,960 [5]	2,530 [6]	7,660 [7]	5,130 [8]	2,240	570	4,090 [10]
Total Projected Workforce, 2018	75,680	14,090 / 1,880	8,030	370	450	15,720	14,470	2,960	8,310	5,770	2,450	590	4,380
Percent Growth from 2008	9,840 (14.9%)	1,920 (15.8%) / 240 (14.64%)	760 (10.5%)	60 (19.4%)	60 (15.4%)	2,890 (22.5%)	1,510 (10.44%)	430 (17%)	650 (8.5%)	640 (12.5%)	210 (9.4%)	20 (3.5%)	290 (7.1%)
Riverside-San Bernardino-Ontario MSA (Riverside and San Bernardino Counties)													
Total Workforce, 2008	78,560 [1]	18,380 / 3,780	5,020	78,560 [1]	710 [4]	17,950	120	4,460	5,040 [7]	4,330 [8]	1,070	530	10,340 [10]
Total Projected Workforce, 2018	81,300	18,910 / 3,910	4,850	81,300	710	19,500	120	4,640	5,120	4,340	990	530	11,120
Percent Growth from 2008	2,740 (3.5%)	530 (2.9%) / 130 (3.4%)	-170 (-3.4%)	2,740 (3.5%)	0 (0 %)	1,550 (8.6%)	0 (0%)	180 (4.0%)	80 (1.6%)	10 (0.2%)	-80 (-7.5%)	0 (0%)	780 (7.5%)
El Centro MSA (Imperial County)													
Total Workforce, 2008	1,660 [1]	120 / 160 [2]	170	1,660	80 [4]	470	760 [5]	230 [6]	120 [7]	90 [8]	1,660 [1]	60 [9]	310 [10]
Total Projected Workforce, 2018	1,740	120 / 170	170	1,740	80	510	840	230	120	100	1,740	60	330
Percent Growth from 2008	80 (4.8%)	0 (0%) / 10 (6.3%)	0 (0%)	80 (4.8%)	0 (0%)	40 (8.5%)	80 (9.52%)	0 (0%)	0 (0%)	10 (11.1%)	80 (4.8%)	0 (0%)	20 (6.5%)

	TRADE												
	Boilermaker	Carpenter/ Cement Finisher	Electrician	Insulation Worker	Ironworker	Laborer	Millwright	Operating Engineer	Painter	Pipefitter	Sheet Metal Worker	Surveyor	Teamster
Santa Ana-Anaheim-Irvine MSA (Orange County)													
Total Workforce, 2008	76,830 [1]	14,360 / 2,230	7,160	540	480 [4]	16,940	13,540 [5]	2570 [6]	7,510 [7]	54,10 [8]	1,580	790	4,780 [10]
Total Projected Workforce, 2018	80,870	15,070 / 2,330	7,580	570	490	19,190	14,960	2,790	7,470	5,900	1,570	880	5,120
Percent Growth from 2008	4,040 (5.3%)	710 (4.9%) / 100 (4.5%)	420 (5.9%)	30 (5.6%)	10 (2.1%)	2,250 (13.3%)	1420 (9.49%)	220 (8.6%)	-40 (-0.5%)	490 (9.1%)	-10 (-0.6%)	90 (11.4%)	340 (7.1%)
Total Projected Workforce, 2018 for All Four MSAs													
	239,590	48,190 / 8,290	20,630	83,980	1,730	54,920	30,390	10,620	21,020	16,110	6,750	2,060	20,950
Total # of Workers for Project Construction by Craft*													
	14	19	55	17	31	20	41	9	9	48	9	5	5

Notes: [1] Construction Trades Workers; [2] Cement Masons and Concrete Finishers; [3] Insulation Workers, Floor, Ceiling, and Wall; [4] Structural Iron and Steel Workers; [5] Industrial Machinery Mechanics and [5] Maintenance and Repair Workers, General and [5] Maintenance Workers, Machinery; [6] Operating Engineers and Other Construction Equipment Operators; [7] Painters, Construction and Maintenance; [8] Plumbers, Pipefitters, and Steamfitters; [9]Architects, Surveyors, and Cartographers; and [10] Industrial Truck and Tractor Operators. *Largest number of workers by trade by month (PPEC 2011a, Section 5.10 Socioeconomics, pg. 5.10-11).

Source: EDD 2010.

The maximum non-local workforce occurs in the sixth month with an estimated 49 workers (including management). The applicant has conservatively considered all of management as non-local workers in the above count.

Nine construction trade disciplines would experience the longest continued employment demand for the project, with an employment duration for much of the project construction period (14-16 months). These trade disciplines are carpenters/cement finishers, electricians, laborers, operating engineers, pipe layers, surveyors, teamsters, commissioning group, management staff. The trades employed for the shortest period are insulation workers with an employment duration of six months. The average employment duration would be 13 months. During construction, non-local workers could temporarily relocate to the project area, particularly those trades needed for much of the project's construction period.

The project would require 12 full-time employees during project operation. These workers are expected to reside within San Diego County. Given the large San Diego County labor force within a one-hour commute of the project, staff does not expect potential employees to relocate to the immediate project area.

Staff concludes the project's construction and operation workforces would not directly or indirectly induce a substantial population growth in the project area, and therefore, the project would create a **less than significant impact**.

Housing Supply

As of April 1, 2010, there was a total of 795,849 housing units in the project area (unincorporated San Diego County and the cities of Chula Vista, Imperial Beach, San Diego, and National City), with a combined vacancy of 53,289 units, representing a 6.70% vacancy rate (CA DOF 2011). San Diego County showed a similar vacancy rate (6.69%) with a total of 1,164,786 housing units and vacancy of 77,921. A five percent vacancy is largely accepted as a minimum benchmark for a sufficient amount of housing available for occupancy (Virginia Tech 2006). The housing counts in the project area indicate a greater supply of available housing units than demand.

In 2009, there was a 12,974,655 annual supply of lodging rooms in San Diego County. The most recent available data estimated a 1.6 percent increase in annual supply of lodging rooms in 2010 (13,183,435) and a 0.3 percent increase was forecasted in 2011,for an annual supply of 13,221,030 lodging rooms (Colliers PKF 2010, PPEC 2011k, pg. Socio-1). The average estimated occupancy rate for San Diego County was 66.3 percent in 2009, estimated at 69.6 percent for 2010, and forecasted to be 71.9 percent in 2011. The average daily rate for rooms in San Diego County was $151.58 in 2009, estimated to be $147.64 in 2010, and forecast to be $156.00 in 2011. Alternative lodging choices in San Diego County include campground and recreational vehicle (RV) facilities. The majority of the approximately 39 alternative lodging facilities within San Diego County are privately owned while some are county-managed (PPEC 2011k, pgs. Socio-2 and Socio-3). A total of 1,133 campground spaces and a total of 4,574 RV spaces are within San Diego County. Nine campground and/or RV facilities are within

15 miles of the project site and provide a total of 122 campground spaces and 1,176 RV spaces.

Given the large supply of lodging choices in the project area and San Diego County and the estimated number of non-local project construction workers (peak estimate- 49 workers), staff expects no new housing would be required as a result of the project.

The project would require 12 full-time employees during project operation. These workers are expected to reside within San Diego County. Given the large labor force within San Diego County and within a one-hour commute to the project, staff does not expect potential employees to relocate to the immediate project area.

Staff concludes the project's construction and operation workforce would not have a significant adverse impact on the housing supply in the project area or San Diego County and therefore, the project would create a **less than significant impact**.

Displace Existing Housing and Substantial Numbers of People

The proposed project site and construction laydown area are located in an unincorporated area of San Diego County known as Otay Mesa. Both sites are vacant and disturbed in an area zoned as Heavy Industrial in the East Otay Mesa Business Park Specific Plan. Within one mile of the project site and 1/4 mile of the project's linear facilities the land uses include industrial, manufacturing, electrical utilities, auto auction, salvage yard, open space park/preserve, and three single-family residences.

Two correctional facilities, the East Mesa Detention Complex and state-run Richard J Donovan Correctional Facility (California Department of Corrections and Rehabilitation), are located a little over one mile to the north of the project site (CDCR 2011).
In addition, the East Otay Mesa Business Park is planned for a mix of industrial, commercial, and technology business park uses, with some rural residential proposed for the hillside area at the eastern edge of the East Otay Mesa area.

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 PPEC would not cause significant impacts to service ratios, response times, or other performance objectives relating to emergency medical services, law enforcement, or schools. Safety and health issues including the applicant's proposed systems and procedures to provide occupational safety and health protection for the PPEC workers are analyzed in the **Worker Safety and Fire Protection** section of this document.

Emergency Medical Services

The project site is located within the service territory for the Rural Fire Protection District (RFPD) of San Diego County. RFPD staff operates 14 stations within their service territory with half of the staff paid and the other half voluntary. The district encompasses a 720-square mile area with a population of over 26,500 (RFPD 2011b). RFPD is an "All

Risk” agency and works closely with the CALFIRE, the United States Forest Service, United States Fish and Wildlife Service, US Bureau of Land Management, San Diego County Sheriff's Department, and California Department of Fish and Game.

Station 22 (Otay Mesa) would be the first responder for medical emergencies at the project site. The fire station and ambulance are located at the same address, 446 Alta Road, approximately 0.25 mile from the project site. The five-minute estimated response time for an emergency medical incident at the project site meets RFPD’s five-minute response service criterion (RFPD 2011a). In the event additional assistance is needed, resources from Station 26 (Donovan) and fire protection services from the cities of Chula Vista and San Diego would be able to respond in accordance with the County Automatic Aid Agreement. Automatic aid agreements with the cities of Chula Vista and San Diego include “All Risk” incident response (RFPD 2011a). The Public Facilities Element in the East Otay Mesa Business Park Specific Plan identifies the need to establish a full-time fire and emergency medical service presence in East Otay Mesa. A new joint RFPD/San Diego County Sheriff station is planned at the intersection of Enrico Fermi Drive and Lone Star Road, less than one mile from the project site. RFPD anticipates the earliest the permanent joint sheriff/RFPD substation would open is in five years (RFPD 2011a). The station would be financed through the Community Facilities District, number 09-1. This special tax is described in more detail in the “Community Facilities District (Number 09-1)” subsection below.

RFPD coordinates emergency medical response and transportation with American Medical Responses (AMR). East Otay Mesa area is an exclusive operating area contracted to AMR. AMR San Diego is a private ambulance provider with over 300 paramedics, emergency medical technicians, and nurses (AMR 2011). RFPD has access to SDFD helicopter (City of San Diego Fire-Rescue Department), San Diego County Sheriff rescue helicopter, and Mercy Air helicopter (RFPD 2011a).

Energy Commission staff contacted RFPD staff to discuss the proposed project, ascertain their ability to provide emergency medical services to the project, and solicit comments or concerns they might have about the project. RFPD staff indicated that existing staffing levels are sufficient for development for at least the next year. Additional staff would be required as development continues and would be funded through existing means (Community Facilities District) (RFPD 2011a). The Fire District conducts an internal review annually to determine areas in need of higher levels or additional levels of service.

The closest medical facility to the project site with emergency medicine services is at the Sharp Chula Vista Medical Center (751 Medical Center Court), approximately 7 miles northwest of the project site. This facility provides a 343-bed hospital, 24-hour emergency services, surgery, cardiac program, and other care services. The emergency room is undergoing a $12 million expansion that would double its capacity from 8,000 to 14, 500 square feet (Sharp 2011). The Sharp Chula Vista Medical Center is part of the Sharp HealthCare system and is one of three member facilities in the city of Chula Vista and near the project site. Sharp Rees-Stealy Otay Ranch Medical Center (1400 East Palomar Street) is approximately 5.5 miles northwest of the project site and provides internal medicine, surgery and other care services (Sharp Rees-Stealy 2011).

Sharp Rees-Stealy Chula Vista (525 Third Avenue) is approximately ten miles northwest of the project site and provides urgent care, occupational medicine, internal medicine, otolaryngology, cardiology, surgery, neurology, upper extremity rehabilitation, and other services. Kaiser Permanente's Otay Mesa Outpatient Medical Center (4650 Palm Avenue, San Diego) provides urgent care, general surgery, internal medicine, occupational health, cardiology, orthopedic surgical care, and immediate care services and is located approximately 6.7 miles northwest of the project site (Kaiser 2011).

The project would be constructed and operated in accordance with all applicable safety standards required by the California Occupational Safety and Health Administration (Cal-OSHA) and San Diego County, as well as other applicable regulations and standards (PPEC 2011a, Section 5.0 Socioeconomics, pg. 5.10-10). During construction, the general contractor for the project would retain a safety manager, who would prepare and implement a site-specific safety plan. The plan would include contact information for a local urgent care facility for non-emergency physician referrals, availability of first aid kits (including those inside construction offices), and first-aid training requirements for all foremen and supervisors plus at least one person per construction crew. The applicant proposes a health and safety program for project construction and plant operation. The construction program would include the following:

- a Construction Personal Protective Equipment Program
- a Construction Exposure Monitoring Program
- a Construction Injury and Illness Prevention Program
- a Construction Emergency Action Plan, and
- a Construction Fire Prevention Plan

The operation program would include:

- an Operation Injury and Illness Prevention Plan
- an Emergency Action Plan
- a Hazardous Materials Management Program
- a Fire Prevention Plan, and
- a Personal Protective Equipment Program

The applicant's proposed construction and operation security measures and health and safety program would minimize potential unsafe work conditions and the need for outside emergency medical response. Staff expects the emergency medical services provided by the RFPD and AMR would be able to respond to medical emergencies that could arise at PPEC during construction and operation. A new joint RFPD/San Diego County Sheriff station is already planned in the East Otay area and a funding source is in place. The project would not necessitate alterations to the existing fire stations that would serve the project or require alterations to the planned joint fire/sheriff station.

Staff concludes the project would not result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities in order to maintain acceptable service ratios, response times, or other performance objectives

with respect to emergency medical service, and therefore, the project would create a **less than significant impact**.

San Diego County Fire Mitigation Fee Ordinance (San Diego County Code of Regulatory Ordinances, Section 810.311)

The San Diego RFPD requires new developments to be assessed a fire mitigation fee. The fee would generate additional funding required for RFPD fire protection needs, including the development of the planned new joint fire/sheriff facility at the intersection of Enrico Fermi Drive and Lone Star Road. The fee is considered a self-mitigation measure for developers to offset the additional fire service costs new development would pose. A rate of $0.46 per square foot of covered and enclosed, non-residential space is applied. The calculation is based on the final design for construction and assessed prior to the issuance of the project building permit (CEC 2011c). Based on the design plans at this stage of project development, approximately 23,050 square feet would be considered chargeable covered and enclosed, non-residential area (PPEC 2011s, pg. 5-25). Based on this preliminary estimate approximately $10,603 in fire mitigation fees would be assessed. Staff is proposing Condition of Certification **SOCIO-1** to ensure payment of fees to San Diego County for disbursement to San Diego RFPD.

Community Facilities District (Number 09-1)

Both the San Diego County General Plan and East Otay Mesa Business Park Specific Plan identify the need to establish a sheriff substation in the East Otay area to provide adequate law enforcement services. The RFPD, with the cooperation of the San Diego County Sheriff Department, implemented a special tax district (Community Facilities District number 09-1) to fund the planned new joint fire/sheriff facility. This tax is assessed and applied in property taxes collected on properties in the East Otay Mesa areas served by the RFPD and County Sheriff's Department, such as the property proposed for the project site.

The project property is within the boundaries of the San Diego RFPD Community Facilities District Number 09-1 (East Otay Mesa) (CFD). Therefore, the project property is subject to the levy of special taxes pursuant to the rate and method of apportionment as set forth in the Notice of Special Tax Lien recorded in the San Diego County Recorder's office (CEC 2011c, CEC 2012k). Once the site is developed, the special tax is applied to the property taxes. The special tax is applied at the time building permits are issued, or if no building permits are issued, once the development breaks ground. Staff has received a copy of the Notice of Special Tax Lien for the CFD number 09-1 special tax in which the project property is listed as a participating property (CEC 2012k).

Law Enforcement

The PPEC proposed project site is located within the jurisdiction of the San Diego County Sheriff's Department Imperial Beach Station, approximately 11.5 miles from the project site. Deputies from the City of Imperial Beach or Bonita would respond to law enforcement calls from the project site (SDCS 2011a). The estimated response time to the project site for priority calls is 15-20 minutes and 20 to 30 minutes for non-priority calls (CEC 2011b). The AFC identified the estimated response time to the project site

for priority and non-priority calls as between 5 to 10 minutes and 17 to 59 minutes, respectively. According to the East Otay Mesa Business Park Specific Plan, for urban unincorporated areas such as East Otay Mesa, the minimum acceptable response time for priority calls is 8 minutes and 16 minutes for non-priority calls. Priority calls are calls involving life threatening situations or felonies in progress (SD County 2010). Estimated response times to the project site for both priority and non-priority calls would not meet minimum standards.

As development permits increased in 2009, San Diego County and property owners acted upon the need to locate a sheriff substation in the East Otay Mesa area (SD County 2010). A temporary substation was planned at the intersection of Enrico Fermi Drive and Otay Mesa Road to be followed by a permanent substation shared with San Diego RFPD at the intersection of Enrico Fermi Drive and Lone Star Road. The permanent joint substation would be developed once the temporary substation could no longer accommodate the needs of growing development (SD County 2010). The temporary substation opened in 2010 and currently does not have regularly assigned staff (SDCS 2011a). Regardless of the current staffing condition, the East Otay Mesa Business Park Specific Plan states the temporary station could accommodate three patrol units working 12.5-hour shifts. RFPD anticipates the earliest the permanent joint sheriff/RFPD substation would open is in five years (RFPD 2011a). If opened in five years, the PPEC, if approved and constructed as proposed, would have been operational for approximately two years.

For security purposes, the applicant is proposing a temporary chain-link fence surrounding the project and construction laydown sites during construction. Once the power plant is operational, a permanent chain-link security fence would encompass the power plant facility and the switchyard. A motorized controlled-access gate for personnel and vehicles would be located at the main entrance. Cameras would allow voice communication between the main gate, control room and reception area. Security would be maintained on a 24-hour basis with either surveillance devices or personnel.

Energy Commission staff contacted San Diego County Sheriff's Department staff 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. Sheriff's Department staff does not foresee the project would be much of an impact (CEC 2011b). The project area has a highly visible law enforcement presence between personnel from the Department of Corrections, California Highway Patrol, Drug Enforcement Administration (DEA), United States Immigration and Customs Enforcement (ICE) and United States Border Patrol. Potential calls for law enforcement at a construction site would be in response to theft, project payroll errors (e.g. no payroll, or bounced paychecks) or calls from the project's on-site security. The project area is statistically a low crime area due to the large law enforcement presence and lack of residences (CEC 2011b).

The California Highway Patrol (CHP) is the primary law enforcement agency for state highways and roads. Services include law enforcement, traffic control, accident investigation and the management of hazardous material spill incidents. The nearest CHP office is located at the Otay Mesa Inspection Facility approximately one mile from

the project site (CHP 2011). CHP responds to traffic incidents in unincorporated San Diego County (SDCS 2011a).

While the estimated response times to the project site do not meet the minimum standards, there are several factors to consider. Unlike residential or commercial developments, power plants do not attract large numbers of people and thus require little in the way of law enforcement. The new joint RFPD/San Diego County Sheriff station is already planned less than one mile from the project site and a funding source is in place. Also, when the existing Otay Mesa power plant was certified and constructed, both San Diego County staff and the Sheriff's Department concurred that the project by itself would not increase the demand for sheriff services within East Otay Mesa (Otay Mesa 2000). Now operational, Sheriff Department staff is not aware of any law enforcement incidents at the Otay Mesa power plant (CEC 2011b).

Staff's analysis shows that the project by itself would not increase the demand for sheriff services within East Otay Mesa, because Sheriff's Department staff does not foresee the project would create much of an impact and a new joint RFPD/San Diego County Sheriff station would be constructed less than one mile from the project site. The project would not necessitate alterations to the existing sheriff stations that would serve the project or require alterations to the planned joint fire/sheriff station.

Staff concludes the project would not result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities in order to maintain acceptable service ratios, response times, or other performance objectives with respect to law enforcement services, and therefore the project would create a **less than significant impact**.

Education

The PPEC site is located within the San Ysidro Elementary School District (San Ysidro ESD) and the Sweetwater Union High School District (SUHSD). San Ysidro ESD provides pre-kindergarten through eighth grade education to regular and special education students. The district has a current enrollment of 5,141students for the 2010/2011 school year (CDE 2010). San Ydisro ESD established a metric for calculating student capacity in its Long-Range Facilities Master Plan (May 2007). Student capacity for a standard classroom (excluding K-3 and special needs) is 30 students (SYSD 2007, pg. 20). The most recent available average class size data is from the 2008/2009 school year. San Ysidro ESD has an average class size of 25.8 - within the established metric for the district (CDE 2010).

SUHSD provides seventh grade through12th grade education plus adult education. The district had an enrollment of 41,126 students for the 2010/2011 school year (CDE 2010). SUHSD has not established a metric for calculating student capacity for a standard classroom. The City of Chula Vista's Growth Management Oversight Commission produces an annual report in which the School District evaluates its ability to accommodate forecasted growth. The City of Chula Vista provides a forecast for a 12- to 18-month period. Results from SUHSD's evaluation showed each of the schools in the District are within capacity for existing conditions (as of November 2010), for 13-

month forecasted conditions, and for five-year forecasted conditions. The planned construction of middle school #12 and high school #14 is needed no earlier than 2014 (CEC 2012i).

During construction, staff expects the majority of the labor force would commute daily from the region. Approximately five percent of the workforce would be non-local workers and temporarily relocate closer to the project site. Considering the duration of project construction (16 months), staff does not anticipate construction workers would relocate their families to the project area and therefore staff does not expect a significant adverse impact to the schools from construction of the proposed project.

Twelve workers are needed to operate the PPEC. Assuming all 12 operational employees reside within San Diego County, with the average family size of 2.76 persons per household for San Diego County, there would be an addition of nine to ten children within these two school districts (US Census 2011b). With the San Ysidro ESD and SUHSD currently within capacity and forecasted to remain within capacity, staff does not expect the possible addition of nine to ten school children would necessitate the provision of new or physically altered government facilities (e.g. schools) in order to maintain acceptable service ratios (e.g. 30 students per classroom).

As noted in **Socioeconomics Table 1**, Section 17620 of the Education Code states "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." State and local agencies are precluded from imposing additional fees or required payments on development projects for mitigating possible enrollment impacts to schools.

The current statutory school fees for the 2011-2012 fiscal year for new commercial or industrial development within the San Ysidro ESD is $0.29 per square foot of covered and enclosed, non-residential space and $0.26 per square foot for new commercial or industrial development within SUHSD (CEC 2012h, CEC 2012j). The applicable fees are calculated prior to the issuance of building permits during plan review. Based on the preliminary project design, approximately 23,050 square feet would be considered chargeable covered and enclosed space (PPEC 2011s, pg. 5-25). Based on this preliminary estimate, approximately $6,684.50 in school fees would be assessed for the San Ysidro ESD and approximately $5,993 would be assessed for SUHSD. Staff is proposing Condition of Certification **SOCIO-2** to ensure the payment of fees to these school districts. PPEC would be in compliance with Section 17620 of the Education Code through the one-time payment of statutory school impact fees to San Ysidro ESD and SUHSD.

Staff concludes the project would have a **less than significant impact** on schools.

Increase the Use of Existing Recreation Facilities or Require the Construction or Expansion of Recreational Facilities

San Diego County provides parks and recreational opportunities countywide with local and regional parks, campgrounds, 300 miles of trails, fishing lakes, state-of-the-art recreation centers and sports complexes, ecological preserves, and open space

preserves (SD County 2011a). These facilities cover more than 44,000 acres, are open year round, and are operated and maintained by county staff, volunteers, and service contracts. Pacific Gateway Park, Otay Lake County Park and the Otay County Open Space Preserve are the larger parks within approximately six miles of the project site. Several neighborhood parks are within six miles of the project site. These parks are the Mountain Hawk Park, Chula Vista Community Park, Salt Creek Community Park, and Sunset View Park and are within the City of Chula Vista. Features in these parks include ballfields, gymnasiums, picnic area, basketball and tennis courts, barbecue grills, shelters/gazebos, soccer field, skateboard parks, and restrooms. East Lake County Club is a combination private/public golf course also in Chula Vista.

The East Otay Mesa Business Park Specific Plan identifies a trail connecting to the Otay River Valley Regional Park (to the northwest of the project site). The route of the planned trail follows Calzada de la Fuente (SD County 2010). Calzada de la Fuente bounds the northern project site boundary. The trail would be a non-motorized, multi-use trail that allows public access to natural scenic areas.

A number of regional and neighborhood parks are within six miles of the project site, including the planned connecting trail to the Otay River Valley Regional Park. Staff's analysis shows there would not be a large number of workers moving into the project area during project construction or operation and there would be no increase in the usage of or demand for parks or other recreational facilities.

Staff concludes the project would not result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities in order to maintain acceptable service ratios, response times, or other performance objectives with respect to parks. The project would not increase the use of neighborhood or regional parks or recreational facilities to the extent that substantial physical deterioration of the facility would occur or be accelerated. The project would not necessitate the construction of new parks in the area, nor does the project propose any park facilities. For the above reasons, staff concludes the project would have a **less than significant impact** on neighborhood or regional parks and recreational facilities.

CUMULATIVE IMPACTS AND MITIGATION

A project may result in significant adverse cumulative impacts when its effects are cumulatively considerable; that is, when the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects [Public Resources Code Section 21083; California Code of Regulations, Title 14, Sections 15064(h); 15065 (c); 15130; and 15355]. Mitigation requires taking feasible measures to avoid or substantially reduce the impacts.

In a socioeconomic analysis, cumulative impacts could occur when more than one project in the same area has an overlapping construction schedule, thus creating a demand for workers that cannot be met locally, or when a project's demand for public services does not match a local jurisdiction's ability to provide such services. An influx

of non-local workers and their dependents can strain housing, schools, parks and recreation, law enforcement, and medical services.

The project site is in San Diego County and within one mile of the city of San Diego. According to the AFC, both jurisdictions were contacted for information on future planned projects. Projects within a three-mile radius of the PPEC site plus projects of regional significance were considered part of the cumulative scenario (PPEC 2011a, Section 5.18 Cumulative Impacts, pg. 5.18-3). Projects included in the cumulative scenario have 1) construction and operational timeframes potentially overlapping with the PPEC, 2) submitted a defined project application for required approvals or permits, or 3) been previously approved and may be implemented in the near future. PPEC construction is anticipated to begin in February 2013 and be completed in April 2014. The list of future planned projects considered for the cumulative scenario included projects that are planned to be in construction or operational during the PPEC's construction and operational phases. The types of projects considered part of the PPEC cumulative scenario include:

- aggregate production projects;
- a correctional facility;
- a wireless telecommunications facility;
- industrial subdivisions;
- business parks;
- a commercial complex;
- a 1,337 single-family residential development;
- a wholesale nursery;
- a service station/mini-mart;
- an international pedestrian bridge; and
- build out of the East Otay Mesa Business Park Specific Plan (PPEC 2011a, Section 5.18 Cumulative Impacts, pgs. 5.18-5 to 5.18-9).

The applicant estimates a maximum of 49 non-local workers during PPEC construction and operation and does not anticipate operational workforce to relocate to the immediate project area. **Socioeconomics Table 6** presents the total labor force for the crafts specifically needed for the construction of PPEC. As shown in the table, the labor force within the San Diego-Carlsbad-San Marcos MSA and the surrounding MSAs are more than sufficient to accommodate the labor needs for construction and operation of the PPEC including other future planned projects.

SOCIOECONOMICS Table 6

Total Labor for Selected MSAs

Total Labor for Selected MSAs	Total Workforce for 2008	Total Projected Workforce for 2018	Growth from 2008	Percent Growth from 2008
San Diego-Carlsbad-San Marcos MSA	135,630	155,150	19,520	12.58%
Riverside-San Bernardino-Ontario MSA (Riverside and San Bernardino Counties)	228,850	237,340	8,490	3.58%
El Centro MSA (Imperial County)	7,550	7,950	400	5.03%
Santa Ana-Anaheim-Irvine MSA (Orange County)	149,310	164,790	15,480	9.39%
TOTALS	521,340	565,230	43,890	7.76%

Note: Total workforce includes only the crafts specifically needed for the PPEC. See **SOCIOECONOMICS Table 5** for a list of crafts included in the total workforce figures.
Source: EDD 2010

As there is a large supply of lodging choices in the project area and San Diego County and there is a greater supply of housing units than demand, staff does not anticipate the project's limited increase in area population would create a significant reduction in the housing supply. Assuming all 12 operational employees reside in San Diego County, the estimated addition of nine to ten children as a result of the operational employees families would be a minimal addition to the San Ysidro ESD and SUHSD. Staff's proposed Condition of Certification **SOCIO-2** would ensure applicable school fees are paid by the project. The increased usage of neighborhood or regional parks or other recreational facilities as a result of the project would be minimal.

Growth within the East Otay Mesa area and associated public services required to support this development has been planned for in the East Otay Mesa Business Park Specific Plan. The project's incremental demand for emergency medical services and law enforcement services would be consistent with increased demand during the growth of the East Otay Mesa area.

RFPD and AMR would be able to provide emergency medical services to the project site. The project would not require alterations to existing fire stations that would serve the project or to the planned joint RFPD/San Diego County Sheriff station. Staff's proposed Condition of Certification **SOCIO-1** would ensure fire mitigation fees are paid by the project. The project, by itself, would not increase the demand for law enforcement services and Sheriff's Department staff does not foresee the project having much of an impact.

Staff concludes the proposed PPEC would not result in any significant and adverse cumulative impacts on population, housing, schools, parks and recreation, law enforcement, and emergency services. **Socioeconomics Table 6** shows there is a more than sufficient workforce available for the PPEC project plus other future planned

projects. Therefore, for the reasons discussed above, staff does not expect the construction or operation of the PPEC to contribute to any significant adverse cumulative socioeconomic impacts.

NOTEWORTHY PUBLIC BENEFITS

Noteworthy public benefits include the direct, indirect, and induced economic impacts of a proposed power plant. For example, the dollars spent on, or resulting from, the construction and operation of the PPEC would have a ripple effect on the local economy. An input-output economic model measures this ripple effect. The model relies on a series of multipliers to provide estimates of the number of times each dollar of input or direct spending cycles through the economy in terms of indirect and induced output, or additional spending, personal income, and employment. The typical input-output model used by economists and the one used for this analysis by the applicant is the IMPLAN model. IMPLAN multipliers indicate the ratio of direct impacts to indirect and induced impacts. Staff reviewed the results of the IMPLAN model and found them to be reasonable based on the model's wide use by governmental agencies, trade associations, and public interest research groups.

PPEC owners would employ workers and purchase supplies and services for the life of the project. Employees would use salaries and wages to purchase goods and services from other businesses. Those businesses make purchases and hire employees who also spend their salaries and wages throughout the local and regional economy. This effect of indirect (jobs, sales, and income generated) and induced (employees' spending for local goods and services) spending continues with subsequent rounds of additional spending, which is gradually diminished through savings, taxes, and expenditures made outside the area.

For purposes of this analysis, direct impacts were said to exist if the project resulted in permanent jobs and wages; indirect impacts, if jobs, wages, and sales resulted from project construction; and, induced impacts from the spending of wages and salaries on food, housing, and other consumer goods, which in turn creates jobs. Indirect and induced economic impacts from construction typically lag behind direct effects by 6 to 12 months, beginning approximately between August 2013 and February 2014 (PPEC 2011a, Section 5.0 Socioeconomics, pg. 5.10-17). Indirect and induced economic impacts from the operation would lag behind direct effects by 6 to 12 months, beginning approximately between September 2014 and March 2015 (PPEC 2011a, Section 5.0 Socioeconomics, pg. 5.10-18). All indirect and induced operation impacts would result from annual operations and maintenance expenditures. All construction and operation impacts would take place within San Diego County. As required by Energy Commission regulation, IMPLAN was used to create an input/output model assessing the economic benefits of the proposed project. The results are shown below in **Socioeconomics Table 7**.

SOCIOECONOMICS Table 7

PPEC Economic Benefits (2010) dollars

Fiscal Benefits	
Estimated annual property taxes	$ 3.6 million
State and local sales taxes:	
Construction	$ 625,200
Operation	$ 84,875 annually
School Impact Fees	$ 6,684.50 est. (San Ysidro ESD) $ 5,993 est. (SUHSD) $ 12,677.50 est. total
Non-Fiscal Benefits	
Total capital costs	$ 300 million
Construction payroll	$ 26 million
Operations payroll	$ 1,020,000 annually
Construction materials and supplies	$ 7,163,300
Operations and maintenance supplies	$ 1,056,000 annually
Direct, Indirect, and Induced Benefits	
Estimated Direct Benefits	
Construction Jobs	148 (average)
Operation Jobs	12
Estimated Indirect Benefits	
Construction Jobs	35
Construction Income	$ 2,168,820
Operation Jobs	2
Operation Income	$ 114,904
Estimated Induced Benefits	
Construction Jobs	177
Construction Income	$ 86,407,798
Operation Jobs	7
Operation Income	$ 299,892
Source: PPEC 2011a, 5.10 Socioeconomics, pgs. 5.10-17 to 5.10-19.	

PROPERTY TAX

The Board of Equalization (BOE) has jurisdiction over the valuation of a power-generating facility for tax purposes, if the power plant produces 50 megawatts (MW) or greater. For a power-generating facility producing less than 50 MW, the county has jurisdiction over the valuation. The PPEC would be a 300 MW power generating facility, therefore, BOE is responsible for assessing property value. The property tax rate is set by the San Diego County Auditor's office. The rate for the current property would be 1.2% for the most recent fiscal year (FY 2010-11) (SD County 2011b).

Assuming a capital cost of $300 million and a minimum property tax rate similar to that currently prevailing on the property, the PPEC would generate approximately $3.6 million in property taxes annually. The increase in property taxes resulting from the PPEC project would be about 0.09% of County's property tax revenues for FY 2010-11 (SD County 2011c).

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Energy Commission staff contacted the San Diego Rural Fire Protection District (Chief David Nissen) and the San Diego County Sheriff Department, (Lieutenant M. Marco Garmo) to discuss the proposed project, ascertain their ability to provide emergency medical and law enforcement services to the project, and solicit comments or concerns they might have about the project. Their comments are included in this analysis.

CONCLUSIONS

Staff concludes the PPEC would not cause a significant adverse direct, indirect, or cumulative socioeconomic impact as result of the construction or operation of the proposed project or contribute to any significant adverse cumulative socioeconomic impacts, for the following reasons:

- The project's construction and operation workforces would not directly or indirectly induce a substantial population growth in the project area.
- The project's construction and operation workforce would not have a significant adverse impact on housing within the project area and would not displace any people or housing, or necessitate construction of replacement housing elsewhere.
- The project would not result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities in order to maintain acceptable service ratios, response times, or other performance objectives with respect to:
    - emergency medical service
    - law enforcement service
    - education
    - parks
- The project would not increase the use of existing neighborhood and regional parks or recreational facilities to the extent that substantial physical deterioration of the facility would occur or be accelerated, and new parks are not proposed by or needed as a result of the project.

PROPOSED CONDITIONS OF CERTIFICATION

SOCIO-1 The project owner shall pay the one-time statutory fire mitigation fee as required by San Diego County Code of Regulatory Ordinances, Section 810.311.

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 of the fire mitigation fees. The payment shall be provided to San Diego County for disbursement to the San Diego Rural Fire Protection District.

SOCIO-2 The project owner shall pay the one-time statutory school facility development fees to the San Ysidro Elementary School District and Sweetwater 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 San Ysidro Elementary School District and to the Sweetwater Union High School District of the statutory development fee.

REFERENCES

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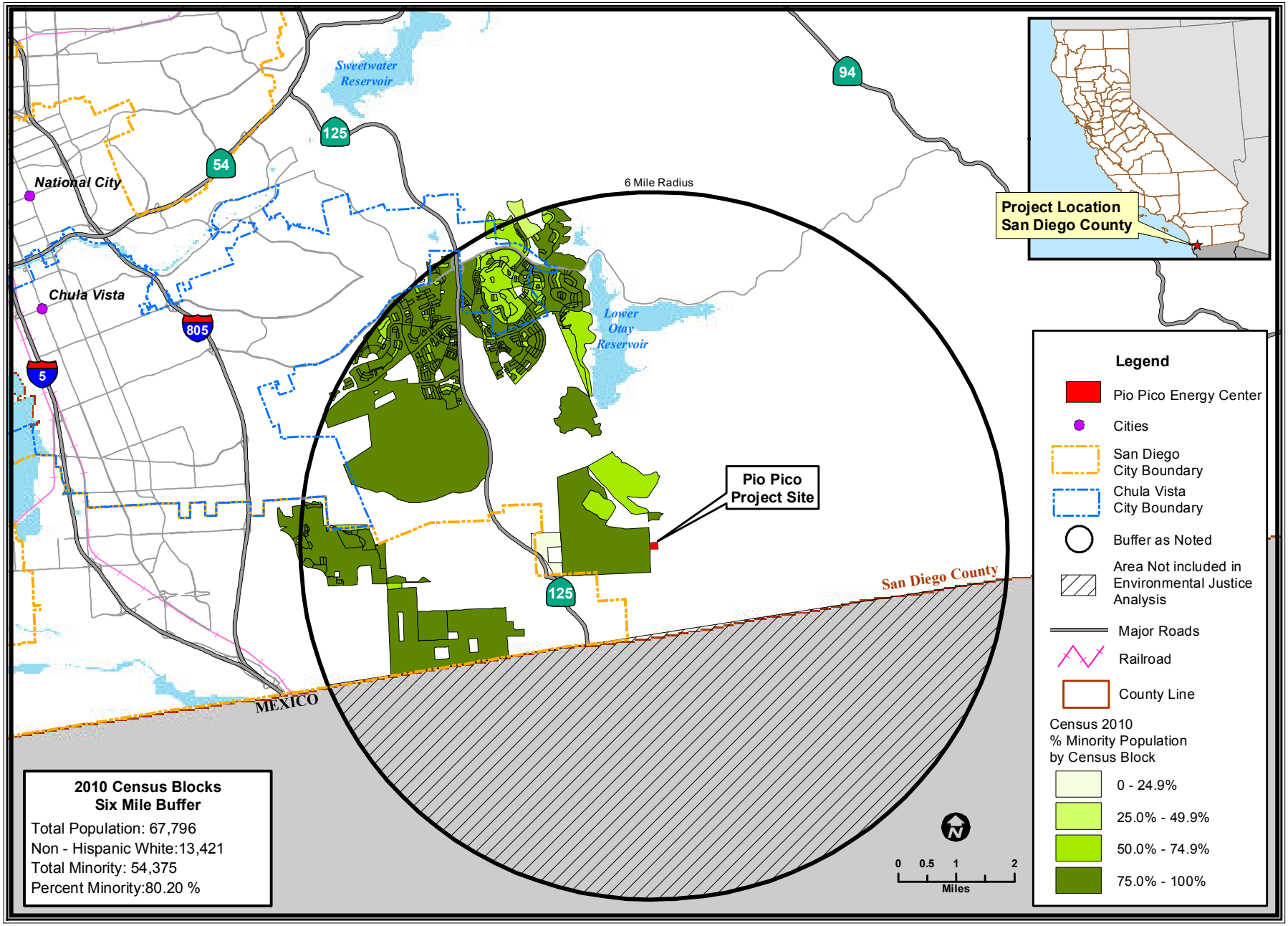
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SOCIOECONOMICS - FIGURE 1

Pio Pico Energy Center - Census 2010 Minority Population by Census Block - Six Mile Radius



SOCIOECONOMICS

CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: California Energy Commission Statewide Power Plant Maps 2011 - Census 2010 PL 94-171 Data

SOIL & WATER RESOURCES

Marylou Taylor, PE

SUMMARY OF CONCLUSIONS

Based on the assessment of the proposed Pio Pico Energy Center (PPEC), California Energy Commission (Energy Commission) staff finds that:

- Implementation of Best Management Practices (BMPs) during the PPEC construction and operation in accordance with a Drainage, Erosion, and Sediment Control Plan (DESCP), construction Storm Water Pollution Prevention Plan (SWPPP), industrial SWPPP, the Stormwater Management Plan (SMP) and the Hydromodification Plan (HMP) required pursuant to **SOIL&WATER-1**, **-2**, **-3**, and **-4** would avoid potential adverse erosion and flood impacts to onsite structures, adjacent properties, and water quality.
- The use of recycled water for operation processes and potable water for operation drinking water and sanitation would be in compliance with state water use policy and would have no adverse environmental impact provided the requirements of Conditions of Certification **SOIL&WATER-5** and **-6** are met.
- Staff supports the applicant's voluntary offer to incentivize an agreement between Otay Water District and the City of San Diego facilitating timely availability of recycled water for PPEC. However, if recycled water availability is delayed indefinitely, then the final staff assessment would further evaluate whether extended use of potable water would be consistent with State water policy. Other alternative measures or offsets may be appropriate on at least an interim basis until recycled water is available.
- In the event recycled water is not available for operation processes, the PPEC would use currently available potable water. A Water Supply Assessment for the PPEC indicates sufficient potable water supplies are planned for and are intended to be available over a 20-year planning horizon to meet the projected demand of the proposed PPEC project and existing and other planned development projects.
- The discharge of sanitary waste to the East Otay Mesa Maintenance District sewer system and process wastewater to the City of San Diego's Pump Station No. 1 industrial wastewater disposal facility would ensure appropriate treatment and disposal of wastewater and would be in compliance with applicable federal, state, and local laws, ordinances, regulations, and standards (LORS) and would have no adverse environmental impact provided the requirements of Conditions of Certification **SOIL&WATER-7** and **-8** are met.
- The proposed project would comply with all applicable federal, state, and local LORS with the adoption of the recommended conditions of certification.
- Construction and operation of PPEC would not result in project-specific or cumulatively significant impacts to soil or water resources with the adoption of the recommended conditions of certification.

INTRODUCTION

Pio Pico Energy Center, LLC (PPEC LLC) proposes to construct and operate a power generation facility, the PPEC, within the County of San Diego in southern California to supply electrical capacity and energy to San Diego Gas & Electric (SDG&E) under a 20-year Power Purchase Agreement (PPA). PPEC would be a simple-cycle power generation project with three General Electric (GE) LMS100 natural gas-fired combustion turbine generators (CTGs) with a nominal total net generating capacity of 300 megawatts (MW).

The California Environmental Quality Act (CEQA) requires that the significant environmental effects of a proposed project be identified and that such impacts be eliminated or mitigated to the extent feasible (Pub. Resources Code, § 21002). CEQA defines a "significant effect" on the environment as a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including … water" (Cal. Code Regs., tit. 14, § 15382).

This section of the Preliminary Staff Assessment (PSA) analyzes the potential effects on soil and water resources by the proposed PPEC. This assessment incorporates information provided to the Energy Commission staff as of November 14, 2011, and focuses on the potential for PPEC to:

- cause accelerated wind or water erosion and sedimentation;
- exacerbate flood conditions in the vicinity of the project;
- adversely affect surface or groundwater supplies;
- degrade surface or groundwater quality; and,
- comply with all applicable laws, ordinances, regulations and standards (LORS) and State policies.

Where the potential for impacts is identified, staff proposes mitigation measures to reduce the significance of the impact and, as appropriate, recommends conditions of certification to ensure that any impacts are less than significant and the project complies with all applicable LORS.

LAWS, ORDINANCES, REGULATION, AND STANDARDS

Soil & Water Table 1
Laws, Ordinances, Regulations, and Standards (LORS) and Policies

Federal LORS	
Clean Water Act (33 U.S.C. Section 1257 et seq.)	The Clean Water Act (CWA) (33 USC § 1257 et seq.) requires states to set standards to protect water quality, which includes regulation of storm water and wastewater discharges during construction and operation of a facility. California established its regulations to comply with the CWA under the Porter-Cologne Water Quality Control Act.
State LORS	
California Constitution, Article X, section 2	The California Constitution requires that the water resources of the state be put to beneficial use to the fullest extent possible and states that the waste, unreasonable use or unreasonable method of use of water is prohibited.
Senate Bill 610 (Water Code Sections 10910-10915)	Signed into law in 2001 amending Sections 10910-10915 of the California Water Code. Requires public water systems to prepare water supply assessments (WSA) for certain defined development projects subject to the California Environmental Quality Act. Lead agencies determine, based on the WSA, whether protected water supplies will be sufficient to meet project demands along with the region's reasonably foreseeable cumulative demand under average-normal-year, single-dry-year, and multiple-dry-year conditions.
The Porter-Cologne Water Quality Control Act of 1967, California Water Code Section 13000 et seq.	Requires the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs) to adopt water quality criteria to protect state waters. Those regulations require that the RWQCBs issue waste discharge requirements (WDRs) specifying conditions for protection of water quality as applicable. Section 13000 also states that the State must be prepared to exercise its full power and jurisdiction to protect the quality of the waters of the State from degradation. Although Water Code 13000 et seq. is applicable in its entirety, the following specific sections are included as examples of applicable sections.
California Water Code Section 13240, 13241, 13242, 13243, & Water Quality Control Plan for the San Diego Basin (Basin Plan)	The Basin Plan establishes water quality objectives that protect the beneficial uses of surface water and groundwater in the Region. The Basin Plan describes implementation measures and other controls designed to ensure compliance with statewide plans and policies and provides comprehensive water quality planning.
California Water Code Section 13260	This section requires filing, with the appropriate RWQCB, a report of waste discharge that could affect the water quality of the state unless the requirement is waived pursuant to Water Code section 13269.
California Water Code Section 13523	If a RWQCB determines that it is necessary to protect public health, safety, or welfare, the RWQCB may prescribe water reclamation requirements for recycled water after consultation with the California Department of Public Health (CDPH).

California Water Code Section 13550	Requires the use of recycled water for industrial purposes when available and when the quality and quantity of the recycled water are suitable for the use, the cost is reasonable, the use is not detrimental to public health, and the use will not impact downstream users or biological resources.
Water Recycling Act of 1991 (Water Code 13575 et. seq.)	The Water Recycling Act states that retail water suppliers, recycled water producers, and wholesalers should promote the substitution of recycled water for potable and imported water in order to maximize the appropriate cost-effective use of recycled water in California.
California Code of Regulations, Title 17	Requires prevention measures for backflow prevention and cross connections of potable and non-potable water lines.
California Code of Regulations, Title 22	Requires CDPH to review and approve new or modified recycled water projects to ensure they meet all recycled water criteria for the protection of public health.
California Code of Regulations, Title 20, Division 2, Chapter 3, Article 1	The regulations under Quarterly Fuel and Energy Reports (QFER) require power plant owners to periodically submit specific data to the California Energy Commission, including water supply and water discharge information.
SWRCB Order 2009-0009-DWQ	The SWRCB regulates storm water discharges associated with construction affecting areas greater than or equal to 1 acre to protect state waters. Under Order 2009-0009-DWQ, the SWRCB has issued a National Pollutant Discharge Elimination System (NPDES) General Permit for storm water discharges associated with construction activity. Projects can qualify under this permit if specific criteria are met and an acceptable Storm Water Pollution Prevention Plan (SWPPP) is prepared and implemented after notifying the SWRCB with a Notice of Intent.
SWRCB Order 97-03-DWQ	The SWRCB regulates storm water discharges associated with several types of facilities, including steam electric generating facilities. Under Order 97-03-DWQ, the SWRCB has issued a NPDES General Permit for storm water discharges associated with industrial activity. Projects can qualify under this permit if specific criteria are met and an acceptable SWPPP is prepared and implemented after notifying the SWRCB with a Notice of Intent.
Local LORS	
RWQCB San Diego Region Order No. R9-2007-01	San Diego Municipal Storm Water Permit: Requires implementation of a Hydromodification Management Plan (HMP) to manage increases in runoff discharge rates and durations from all Priority Development Projects, where such increased rates and durations are likely to cause increased erosion of channel beds and banks, sediment pollutant generation, or other impacts to beneficial uses and stream habitat due to increased erosive force." www.swrcb.ca.gov/rwqcb9/water_issues/programs/stormwater/sd_stormwater.shtml The County has adopted the Standard Urban Stormwater Mitigation Plan (SUSMP) for Land Development and Public Improvement Projects. The SUSMP only addresses land development and capital improvement projects. It is focused on project design requirements and related post-construction requirements, not on the construction process itself. www.sdcounty.ca.gov/dpw/watersheds/susmp/susmp.html

San Diego County Code Sections 67.801 et seq. Ordinances 10096	County of San Diego Watershed Protection, Stormwater Management and Discharge Control Ordinance (WPO): Seeks to protect water resources and to improve water quality. Contains discharge prohibitions and requirements that vary depending on type of land activity and location in the County. www.sdcounty.ca.gov/dpw/watersheds/watershedpdf/watershed_ordinance_signed_dec2010.pdf The Stormwater Standards Manual (SSM) is an appendix of the WPO and sets out in more detail, by project category, what dischargers must do to comply with the WPO and to receive permits for projects and activities that are subject to the WPO. www.sdcounty.ca.gov/dpw/watersheds/watershedpdf/watershed-std-manual.pdf
San Diego County Title 8, Division 7 Ordinance 9547	Excavation And Grading, Clearing, And Watercourses Ordinance: Combines the regulations affecting the grading and clearing of land, and activities affecting watercourses, within the unincorporated area of San Diego County. It is intended to improve environmental protection, streamline the required procedures and permits for grading and clearing, and to comprehensively clarify the duties and responsibilities of county officials administering the permit and enforcement processes. www.sdcounty.ca.gov/cob/ordinances/ord9547.doc
San Diego County Ordinance No. 9146	Specifies development fees, agreements, and requirements for the East Otay Mesa Sewer Maintenance District. www.sdcounty.ca.gov/cob/ordinances/ord9146.pdf
City of San Diego, Municipal Code 64.0500-64.0520	Any discharger of industrial wastes into the Metropolitan sewerage system is required to obtain a permit from the Industrial Wastewater Control Program to meet federal law (Code of Federal Regulations, Title 40, Effluent Guidelines and Standards). Also requires a Trucker's Discharge Permit for liquid waste transport trucks to discharge into the City's public sewers or facilities. www.sandiego.gov/mwwd/environment/iwcp/docs.shtml
State Policies and Guidance	
Integrated Energy Policy Report (Public Resources Code, Div. 15, Section 25300 et seq.)	In the 2003 Integrated Energy Policy Report (IEPR), consistent with SWRCB Policy 75-58 and the Warren-Alquist Act, the Energy Commission clearly outlined the state policy with regards to water use by power plants, stating that the Energy Commission would approve the use of fresh water for cooling purposes only where alternative water supply sources and alternative cooling technologies are shown to be "environmentally undesirable" or "economically unsound."
SWRCB Res. 2009-0011 (Recycled Water Policy)	This policy supports and promotes the use of recycled water as a means to achieve sustainable local water supplies and reduction of greenhouse gases. This policy encourages the beneficial use of recycled water over disposal of recycled water.
SWRCB Res. 75-58	The principal policy of the SWRCB that addresses siting of energy facilities is the Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Power Plant Cooling, adopted by the Board on June 19, 1976, by Resolution 75-58. This policy states that use of fresh inland waters should only be used for cooling if other sources or other methods of cooling would be environmentally undesirable or economically unsound.
SWRCB Res. 77-1	SWRCB Resolution 77-1 encourages and promotes recycled water use for non-potable purposes and use of recycled water to supplement existing surface and groundwater supplies.

EAST OTAY MESA

PPEC would be constructed in East Otay Mesa, a business park located in the southwestern portion of unincorporated San Diego County immediately north of the U.S./Mexico border. The East Otay Mesa Specific Plan sets over 2,000 acres as a modern industrial and business center while about 550 acres is set aside for conservation or very low-density residential use. The area consists of a relatively flat mesa with the steep San Ysidro Mountains on the eastern edge and the Otay River Valley and tributary canyon to the north. Historically, the flatter portions were used for agriculture and the steeper areas were never developed (SDC 2010).

The northern half of East Otay Mesa, where the PPEC site is located, falls within the Otay River watershed, which is approximately one third the area of the larger 415-square-mile San Diego Bay watershed. Major water bodies in the nearby vicinity include the Upper Otay Reservoir, formed by Upper Otay Dam, the Lower Otay Reservoir, formed by Savage Dam, and the Otay River, which ultimately discharges into the south end of San Diego Bay. The topographic flow from this portion of East Otay Mesa drains west toward Johnson Canyon then into the Otay River. The confluence between Johnson Canyon Creek and Otay River is approximately three miles downstream of Savage Dam and nine miles upstream of San Diego Bay (Aspen 2006).

In San Diego County, residents, visitors and nature rely on the region's water resources to provide beneficial uses, defined as "uses of water necessary for the survival or well being of people, plants and wildlife." The Water Quality Control Plan for the San Diego Basin (Basin Plan) designates beneficial uses for water bodies in the San Diego Region, and establishes water quality objectives and implementation plans to protect those beneficial uses.

Flow from this portion of East Otay Mesa drains west toward Johnson Canyon then into the Otay River. The beneficial uses for Johnson Canyon and the Otay River, as designated by the Basin Plan, are:

- Agricultural Supply –farming, horticulture, or ranching
- Non-contact Water Recreation – recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible (i.e. picnicking, hiking, camping, boating).
- Warm Freshwater Habitat – supports warm water ecosystems
- Wildlife Habitat – supports terrestrial ecosystems or wildlife water and food sources
- Rare, Threatened, or Endangered Species (for Otay River only) – supports habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened, or endangered.

Groundwater comprises only a minor portion of water supplies in the San Diego regional area, and no comprehensive program exists to monitor groundwater elevations in the

Otay River watershed. The Otay Valley Groundwater Basin has a surface area of approximately 11 square miles located adjacent to the Pacific Coast and extending inland along the Otay River past the confluence with Johnson Canyon Creek. The East Otay Mesa area is found upgradient and outside the boundary of the Otay Valley Groundwater Basin (Aspen 2006).

LOCAL WATER SUPPLIES

East Otay Mesa is located within the water service area of Otay Water District (OWD), a water purveyor and a member agency of the San Diego County Water Authority (SDCWA). SDCWA is San Diego County's regional water wholesaler, formed in 1944 for the purpose of supplementing local supplies with imported water. Since 1980, 70 to 95 percent of annual water supplies in the SDCWA service area, supplying approximately 97 percent of County residents, have been imported from the Colorado River Aqueduct and State Water Project (Aspen 2006).

OWD, comprised of five water service areas, is responsible for delivering potable and recycled water to customers within its jurisdictional area of approximately 80,320 acres (125.2 square miles). OWD is located in southwestern San Diego County, inland from the cities of San Diego, Chula Vista, and National City. OWD's primary potable supply system delivers potable water from SDCWA conveyance facilities to all of its customers. The SDCWA does not have contractual agreements with its member agencies to guarantee flow rates or hydraulic gradients at their various connections. Generally, if SDCWA cannot obtain sufficient treated and/or raw water, or has delivery limitations for the water requests of its 24 member agencies, they will attempt to allocate the water delivery shortfall to its member agencies on a proportional basis (PBSJ 2010).

In addition to supplying potable water throughout its service area, OWD owns and operates the Ralph W. Chapman Water Reclamation Facility, which produces approximately 1.2 million gallons per day (mgd) of recycled water to a tertiary level for non-potable reuse. OWD's recycled water distribution system is currently limited to only a portion of its service area, delivering recycled water mainly to the eastern part of Chula Vista where it is used mostly for landscape and golf course irrigation. Over the years, the demand for recycled water in the Chula Vista area increased. In 2003, OWD entered into an agreement to purchase additional recycled water from the City of San Diego's facility called the South Bay Water Reclamation Plant (SBWRP). The agreement included an annual amount of up to 6 mgd of recycled water that met specific water quality criteria. In 2007, OWD completed a major transmission project that allowed recycled water from the City of San Diego's facility to be conveyed and blended with the recycled water from OWD's facility, increasing the output to OWD customers by up to three times the previous amount[1].
Currently, recycled water is unavailable in Otay Mesa. Although developers in the area have been required to install recycled water service laterals and meters in anticipation of future recycled water availability, none are currently receiving recycled water. These

[1] Prior to 2007, OWD's supply of recycled water was limited to about 1,200 acre feet per year (afy). Under the 2003 agreement, SBWRP produces only enough recycled water to meet OWD's near-term demands, which are typically low during the winter and peak during hot summer months. Historical data show that the highest annual supply from SBWRP occurred in 2008 and 2009, when over 3500 afy of recycled water was delivered to OWD for each year.

facilities are dual metered, meaning that recycled water meters were installed, but they receive only potable water at this time. OWD plans to expand its regional recycled water delivery system to Otay Mesa, including this area in the last of three phases of capital improvement projects for ultimate development. OWD's Water Resources Master Plan shows this phase of development beginning in 2017, but states that projects may be accelerated or deferred to account for issues such as funding limitations, environmental concerns, or availability of additional recycled water supplies (PBSJ 2010).

WASTEWATER SEWER SERVICE

The County of San Diego provides sewer service for approximately 50,000 customers in unincorporated areas of the county. The Wastewater Management Section of the County Department of Public Works (DPW) is responsible for operations and overall administration of the County's sanitation and maintenance districts' wastewater systems. There are nine districts within the county that are separate entities, each with its own budget, sewerage infrastructure, operational permits, and environmental compliance criteria created to provide wastewater service. The East Otay Mesa area is served by the East Otay Mesa Maintenance District. Wastewater flows from the district are conveyed to the City of San Diego's Metropolitan sewerage system for treatment (PPEC 2011a).

The San Diego Metropolitan Sewage System (Metro System) provides conveyance, treatment, reuse, and disposal of wastewater for the City of San Diego and 15 other cities and agencies. Wastewater flows from the City of San Diego comprise approximately 70 percent of total Metro System flows, and the remaining flows are constributed by the other 15 participating agencies Metro System facilities include wastewater collection interceptors and pump stations, wastewater treatment and water recycling plants, and sludge pipelines and solids handling facilities. The two land/ocean outfall systems that discharge treated wastewater from the Metro System are the Point Loma Ocean Outfall and the South Bay Ocean Outfall[2] (CSD 2007).

Soil & Water Figure 1 shows the location of key Metro System facilities. Wastewater collected from the northern portion of the Metro System service area is conveyed to Pump Station No. 2 and the Point Loma Wastewater Treatment Plant. Wastewater from the majority of the southern region is conveyed to Pump Station No. 1 before reaching Pump Station No. 2 then on to Point Loma. A portion of the wastewater generated within the southern portion of the Metro System, which includes the East Otay Mesa area, is directed to the South Bay Water Reclamation Plant (SBWRP) (CSD 2007). The East Otay Mesa Maintenance District has rights to 1.0 mgd of the Metro system's treatment and disposal capacity (PPEC 2011a).

PROJECT DESCRIPTION

The proposed PPEC project would be a nominal 300 megawatt peaking power plant using three natural gas-fired combustion turbine generators. Refer to the **Project**

[2] The South Bay Ocean Outfall is jointly-owned by the International Boundary Water Commission and the City of San Diego. The outfall discharges wastewater from both the SBWRP and the International Wastewater Treatment Plant.

Description section of this PSA for more information on PPEC's major features including water use, wastewater discharge, and storm water handling. Additional information relevant to the soil and water resources analysis is summarized below. For a complete detailed description of the proposed project, refer to the PPEC Application for Certification ([AFC] PPEC 2011a) and the applicant's related supplemental material.

SOIL EROSION AND STORM WATER CONTROL

PPEC Project Site

The project's onsite drainage would consist of underground drainage system and ditches around the site conveying storm water runoff into an unlined detention basin in the northwest corner of the site. Drainage facilities are sized to discharge the 100-year, 24-hour storm event without flooding the project site. From the basin it would flow to an existing 30-inch storm water pipeline located along Calzada de la Fuente then into the regional storm water management and conveyance system and toward Johnson Canyon (PPEC 2011a).

Prior to construction, the applicant would prepare a Storm Water Pollution Prevention Plan (SWPPP) to control storm water and soil erosion during the facility's construction using best management practices (BMPs)[3]. Similarly for the facility's operation, a Stormwater Management Plan with a corresponding SWPPP would be developed to manage storm water and prevent soil erosion through the life of the project (PPEC 2011a).

Laydown Area

The construction laydown area is not currently paved, nor would it be paved during or after PPEC construction. Prior to use as a laydown area, erosion control measures would protect the property from erosion damage and prevent accelerated soil erosion or dust generation. These BMPs would be identified and included in the construction-phase SWPPP. Existing topography currently allows storm water runoff to sheetflow into an unlined detention basin in the southwest corner of the laydown area. The basin outlet structure discharges to a 24-inch storm water pipeline and connects to an existing drainage system under Paseo De La Fuente, eventually draining toward Johnson Canyon (PPEC 2011a).

Linear Facilities

The two major linear facilities associated with PPEC are an electrical transmission line (owned and maintained by the applicant) and a natural gas pipeline (constructed, owned, and operated by SDG&E), both would extend beyond PPEC boundaries (see **Project Description - Figure 4, Alternative Routes for Natural Gas Line**). The remaining proposed linear facilities are mainly short connections from PPEC to existing underground utilities along PPEC site boundaries that service the area (potable water

[3] 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.

pipeline, reclaimed water pipeline, storm water pipeline, and sewer pipeline). Installation and construction of these linear facilities can result in soil erosion; therefore BMPs would be identified and included in the construction-phase SWPPP (PPEC 2011a).

As with the laydown area and PPEC site, most of the proposed linear facilities are located in areas where storm water runoff would eventually drain into Johnson Canyon. A portion of the proposed Route B transmission line southeast of the PPEC site is located in the Tijuana River watershed where runoff would collect into an unnamed intermittent drainage and flow into Mexico (PPEC 2011a).

WATER USE

Process Water

PPEC proposes to use recycled water as its primary source of cooling and process water. The total average annual use and demand of recycled water is estimated at 314 acre feet per year (afy) as shown in **Soil & Water Table 2**. To increase efficient use of the recycled water provided by OWD, PPEC would treat process wastewater through an onsite Enhanced Water Treatment System (see “Process Wastewater” description below). This high-pH reverse osmosis system would mix with incoming recycled water for facility process reuse, reducing the amount of annual water consumption.

Soil & Water Table 2
Annual Water Flows Based on Recycled Water Supply

Process Use	Annual Amount
Cooling System Makeup: recycled water in a wet surface air cooler (WSAC) system would provide evaporative cooling of the closed loop cooling tube bundle used for CTG intercoolers and lube oil coolers to improve compressor efficiency	178 afy
NOx Reduction and Compressor Blade Cleaning: recycled water processed through ultrafiltration and reverse osmosis systems for production of demineralized water that would be injected into each CTG	178 afy
Evaporative Cooler Makeup: recycled water would cool the inlet air at each CTG to enhance performance during hot weather	18 afy
Service Water: recycled water use for wash-down and other routine facility water use	3 afy
Total Process Water Use	377 afy
Enhanced Water Treatment (EWT) System: an onsite high-pH reverse osmosis system would treat process wastewater making it suitable to mix with incoming recycled water for process reuse	(63 afy)
Total Process Water Demand	314 afy

(Source: PPEC 2011s)

A 500,000 gallon above-ground raw water storage tank would hold recycled water to be supplied by OWD and treated process wastewater produced from the onsite Enhanced Water Treatment System prior to use as PPEC process water. This tank would also serve as a secondary source of the facility's fire protection water. If the recycled water deliveries were temporarily interrupted, the PPEC facility could still continue to operate for approximately 8.5 hours during average operations using water stored on site in the raw water storage tank and the 240,000 gallon above-ground demineralized water storage tank. A potable water connection on site can be used as an emergency back-up water supply.

Since recycled water is currently not available at the project site and in East Otay Mesa, the PPEC project would rely on currently available potable water to be provided by OWD. **Soil & Water Table 3** shows the maximum daily, average daily, and average annual water flows of process water using recycled water compared to potable water. The difference in process water amounts would be due to a higher facility efficiency using potable water.

Soil & Water Table 3
Process Water Daily and Annual Flows

Source	Max Daily (1,000 gpd)	Ave Daily (1,000 gpd)	Annual (afy)
Recycled water	706	280	314
Potable water	700	278	311

(Source: PPEC 2011s)

Domestic Water

PPEC would use potable water for drinking water, showers, sinks, toilets, eye wash stations, safety showers in hazardous chemical areas, and landscape irrigation. Potable water will also serve as the facility's primary source of fire protection water. The estimated amounts of potable water for these uses would be:

- Maximum Daily of 3,000 gallons per day (gpd)
- Average Daily of 1,000 gpd
- Annual of 1 afy

Potable water would also be used as an emergency back-up for industrial use in case recycled water deliveries from OWD are temporarily interrupted. In the event recycled water becomes available, PPEC would continue the use of potable water for these domestic water uses with the exception of landscape irrigation[4].

Construction Water

During construction of PPEC, water would be required for dust suppression, soil compaction, and hydrostatic testing (see **Soil & Water Table 4**).

Soil & Water Table 4
Construction Water Daily and Annual Flows

Water Demand	Max Daily (1,000 gpd)	Ave Daily (1,000 gpd)	Annual (afy)
Dust Suppression & Soil Compaction	30	23	26
Hydrostat test water	840	280	2

(Source: PPEC 2011d)

The applicant proposes to develop a 'Non-Potable Construction Plan' to limit the use of potable water for any construction activity that is suitable for non-potable water use. The plan would identify activities, such as dust control, equipment washing, soil compaction, and other short-term uses during construction that would use non-potable water. However, until recycled water is available at the project site and in East Otay Mesa, construction activities would rely on currently available potable water.

[4] Otay Water District intends to require use of recycled water for landscape irrigation of commercial facilities in the Otay Mesa area once recycled water is available.

WASTEWATER MANAGEMENT

Construction Wastewater

Construction wastewater would be comprised only of water used for hydrostatic testing (to check pressure vessels and pipes for leaks or flaws), because construction water used for dust control and soil compaction would not discharge offsite. The total amount of wastewater from hydrostatic testing, approximately 840,000 gallons, would be discharged to the existing East Otay Mesa Sewer Maintenance District sewer system (PPEC 2011a).

Sanitary Waste

During construction, sanitary waste would be contained in portable facilities and routinely disposed of at an offsite treatment/disposal facility. During operation, the PPEC's sanitary sewer system would collect the sanitary wastewater for discharge to the East Otay Mesa Sewer Maintenance District's sewer system (PPEC 2011s).

Process Wastewater

PPEC would use an Enhanced Water Treatment (EWT) System to treat process wastewater for reuse. Process wastewater (blowdown[5]) from the wet surface air coolers and the oil/water separator effluent would be stored in a 95,000 gallon process wastewater collection tank. The EWT System, designed to operate at elevated pH levels, would control biological, organic, and particulate fouling, eliminate scaling due to calcium and metal salts, and increase organics rejection. The resulting treated water would be piped back to the raw water tank, returning 80 to 90 percent of the process wastewater for reuse. The EWT reject, a highly saline wastewater, would be the final wastewater effluent that would be stored in a dedicated 20,000 gallon final wastewater storage tank (PPEC 2011s).

Due to highly saline effluent, the final wastewater would exceed maximum total dissolved solids (TDS) limits of the East Otay Mesa Sewer Maintenance District and not be allowed into the local sanitary sewer system that conveys wastewater to the SBWRP. Instead, the final wastewater stream would be pumped from the final wastewater storage tank into tanker trucks and transported to the City of San Diego's industrial wastewater disposal facility located at Pump Station No. 1 (see **Soil & Water Figure 1**). This facility is a receiving station that eventually conveys flows to the Point Loma Wastewater Treatment Plant (WTP), which does not have a restriction on TDS concentrations.

As described in "Process Water" above, PPEC would require less process water when using potable water due to higher facility efficiency. As a result, a similar decrease in the annual amount of wastewater discharge would occur if potable water were used for process demands (see **Soil & Water Table 5**).

[5] Blowdown is the process of removing a portion of the concentrated recirculating water to prevent the intercooler and cooling tower from reaching the point of scale formation.

Soil & Water Table 5
Process Wastewater Daily and Annual Flows

Source	Max Daily (1,000 gpd)	Ave Daily (1,000 gpd)	Annual (afy)
Recycled water	30	12	14
Potable water	24	10	11

(Source: PPEC 2011s)

The applicant evaluated the use of zero liquid discharge (ZLD) technology and has asserted that the use of this technology for PPEC would not be economically feasible.

CONTAMINATED SOIL AND WATER

A Phase 1 Environmental Assessment prepared in December 2010 for the PPEC project concluded that the site has always been undeveloped vacant land. No onsite recognized environmental conditions (RECs) were identified and no surrounding properties within a one-mile radius were noted for potential environmental concern (PPEC 2011a). In the event that contaminated soil is encountered during construction or operational phases, the material would be stored temporarily on site and removed for disposal or treatment and recycling. Management of contaminated excavated materials would be conducted in accordance with applicable LORS (refer to the **Waste Management** section of this PSA for additional information related to contaminated soil).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

This section provides an evaluation of the expected direct, indirect, and cumulative impacts to soil and water resources that could be caused by construction, operation, and maintenance of the PPEC. Staff's analysis consists of the following steps: establishing thresholds of "significance" used to determine if there is a potentially "significant" impact, gathering data related to construction and operation of the project, screening the data against the thresholds of significance then reaching a conclusion to determine whether or not the project presents a potentially "significant" impact. If staff determines there is a significant impact then staff evaluates the applicants' proposed mitigation for sufficiency and staff may or may not recommend additional or entirely different mitigation measures that are potentially more effective than those proposed by the applicant. Mitigation is designed to reduce the effects of potentially significant PPEC impacts to a level that is less than significant.

METHOD FOR DETERMINING SIGNIFICANCE

Impacts leading to soil erosion or depletion or degradation of water resources are among those staff believes could be most potentially significant soil and water resource issues associated with the PPEC. The determination of significance for these issues is discussed below.

Soil Resources

Staff evaluated the potential impacts to soil resources including the effects of construction and operation activities that could result in erosion and downstream transportation of soils and the potential for contamination to soils and groundwater. There are extensive regulatory programs in effect that are designed to prevent or minimize these types of impacts. These programs are effective, and absent unusual circumstances, an applicant's ability to identify and implement BMPs to prevent erosion or contamination is sufficient to ensure that these impacts would be less than significant. In addition, soils would be protected by the development and implementation of grading plans, a drainage plan, and applicable storm water pollution prevention plans. Staff's overall evaluation is that the PPEC can be built and operated in accordance with existing LORS. The LORS and policies presented in **Soil & Water Table 1** were used to determine the significance of PPEC impacts.

Water Resources

Staff evaluated the potential of PPEC to cause a significant depletion or degradation of surface water and groundwater resources. Staff considered compliance with the LORS and policies presented in **Soil & Water Table 1** and whether there would be a significant impact under the California Environmental Quality Act (CEQA).

To evaluate if significant CEQA impacts to soil or water resources would occur, the following questions were addressed. Where a potentially significant impact was identified, staff or the applicant proposed mitigation to ensure the impacts would be less than significant.

- Would the project violate any water quality standards or waste discharge requirements?
- Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level?
- Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?
- Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?
- Would the project create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?
- Would the project otherwise substantially degrade water quality?
- Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

- Would the project place within a 100-year flood hazard area structures which would impede or redirect flood flows?
- Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?
- Would the project be inundated by seiche or tsunami?
- Would the project result in substantial soil erosion or the loss of topsoil?
- Does the project have impacts that are individually limited, but cumulatively considerable? ("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)?
- Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

DIRECT/INDIRECT IMPACTS AND MITIGATION

A discussion of the direct and indirect PPEC construction and operations impacts and mitigation is presented below. For each potential impact evaluation, staff describes the potential effect, summarizes the applicant's position, then analyzes impacts by applying threshold criteria for determining significance If mitigation is warranted, staff provides a summary of the applicant's proposed mitigation and a discussion of the adequacy of the proposed mitigation. In the absence of applicant-proposed mitigation or if mitigation proposed by the applicant is inadequate, staff mitigation measures are recommended.

Direct Impacts

The proposed PPEC project consists of the project site, linears, and a temporary laydown area. Construction of the PPEC would affect the areas listed below in **Soil & Water Table 6**. For proposed locations of gas pipeline and electrical transmission line, see **Project Description - Figure 3, Alternative Routes for Natural Gas Line.** Connections to sewer, storm water, and water supply require only short pipelines to existing underground utilities located adjacent to the project site.

Soil & Water Table 6
Description of Land Potentially Impacted by the Proposed Project

Structure	Existing Land Use	Total Area
PPEC Project Site	Undeveloped land	9.99 acres
Construction Laydown Area	Undeveloped land	6.00 acres
Natural Gas Line – Route A (7,775 feet long)	Existing road right-of-way	8.92 acres
Natural Gas Line – Route B (10,300 feet long)	Existing road right-of-way	11.82 acres
Power Line – Route A (2,100 feet long)	Existing road right-of-ways and undeveloped land	3.86 acres
Power Line – Route B (2,650 feet long)	Existing road right-of-ways and undeveloped land	4.87 acres

(Sources: PPEC 2011a; PPEC 2011h)
Notes:
1. PPEC Project site includes service utilities connections to sewer, storm water, and water supply.
2. Gas line assumes 50-foot width access, and trenches for pipeline 4-feet wide.
3. Power line assumes 80-foot width access, and transmission line pole excavation footprint of 4-foot by 4-foot.

During the spring of 2011, after submittal of the AFC in February 2011, the industrial park developer graded the project site and adjacent laydown area[6]. A significant amount of native soil was removed from the site, resulting in a difference in ground elevation of about 25 feet lower than prior to the earthwork. This excavation has created a large slope (approximately 28 feet tall at about 40 percent slope) at the east property line. The soil removal and grading of the property were already planned prior to the inception of the Pio Pico project and would have occurred regardless. Therefore, the topography resulting from this grading activity is considered the project's site baseline conditions for staff's analysis of potential impacts.

Flooding and Flood Hazards

Onsite Area Flooding

The existing topography of the proposed site is relatively flat bare soil with a constant 1-percent grade across the entire site. Adjacent properties are graded such that practically no storm water runoff originating offsite enters onsite. During rain events, storm water from the entire 9.99 acre site that does not soak into the ground will sheetflow toward the northwest corner of the property into an onsite unlined detention basin. Flow from the basin is controlled by a discharge structure that is designed to prevent flooding during a sustained 100-year storm, under existing conditions. From the basin, flows continue offsite through a storm water pipeline then into the regional storm water management and conveyance system.

[6] Grading activities were subject to 2009-2010 County of San Diego Grading Permit 2700-1555.

Proposed grading and construction of the Pio Pico project would permanently alter onsite drainage. The addition of concrete foundations and asphalt roadways would create approximately 2.9 acres of impervious surfaces, covering about 29 percent of the project site (PPEC 2011s). An increase of impervious area (all else being equal) will increase the amount of storm water runoff volume and rate, which can cause onsite flooding if flows exceed the discharge capacity of the onsite detention basin.

The construction laydown area, although not technically part of the final PPEC project site, is included in this analysis of onsite area flooding because they are adjoining areas. The laydown area is currently graded similar to the project site, at a 1-percent grade across the entire 6.0 acres, except sheetflow is directed to the southwest corner of the site. The laydown area has its own existing unlined detention basin with a discharge structure, and flows continue offsite through a storm water pipeline then into the regional storm water management and conveyance system. Adjacent properties are graded such that practically no storm water runoff originating outside the laydown area enters this area.

The proposed solution to prevent onsite flooding is construction of an underground drainage system and ditches around the site to convey runoff into the existing detention basin. The applicant submitted a Preliminary Draft Drainage, Erosion, and Sediment Control Plan (DESCP) which includes the preliminary drainage design and a summary of hydrologic and hydraulic calculations for both pre-development and post-development conditions. All proposed drainage facilities are sized to discharge the 100-year, 24-hour storm event without flooding the facility. The analysis shows that post-development peak discharge into the existing onsite detention pond would be 39.37 cubic-feet per second compared to the pre-development value of 50.18 cubic-feet per second. In other words, the project's proposed drainage system and final grading would reduce the rate in which storm water would fill the existing onsite detention basin.

The Preliminary Draft DESCP includes the design peak outflow detention basin for the laydown area, but "post-development" conditions were not modeled because no changes are proposed. The area has already been graded, and would not be paved. The application only states that gravel may be placed prior to use as a laydown area.

Staff reviewed the preliminary drainage plans as shown in the Preliminary Draft DESCP, and believes the proposed design adequately manages storm water during both construction and operation. Because the peak discharge of the 100-year, 24-hour storm event into the onsite detention basin is less during post-development conditions compared to pre-development conditions, staff agrees that PPEC would avoid significant adverse impacts which would result in onsite flooding. Condition of Certification **SOIL&WATER-1** requires an approved DESCP prior to construction that reflects PPEC final drainage design and is consistent with the grading and drainage plans required in the **Facility Design** section of this PSA.

Offsite Area Flooding

The PPEC site, laydown area, or linears would not alter existing offsite drainage patterns such as the course of a stream or river. In addition, no surface water features (intermittent or continuous) currently cross nor would cross any portion of the proposed

PPEC site or the construction laydown area. Based on the topography of the proposed site and the surrounding areas, the construction of PPEC would not cause offsite flooding to areas upstream of the proposed site.

However, proposed grading and construction of the Pio Pico project would increase the amount of impervious area onsite which (all else being equal) would increase the amount of storm water runoff volume and rate leaving the site. This can cause offsite flooding of areas that are downstream of the project site if flows overwhelm the discharge capacity of these downstream offsite drainage structures.

As mentioned earlier, the applicant submitted a Preliminary Draft DESCP which includes the preliminary drainage design and a summary of hydrologic and hydraulic calculations for both pre-development and post-development conditions. The analysis shows that post-development peak discharge from the existing onsite detention pond would be 6.80 cubic-feet per second compared to the pre-development value of 11.96 cubic-feet per second. In other words, the project's proposed drainage system and final grading would reduce the rate at which storm water would leave the site and enter into the regional storm water system.

Staff reviewed the preliminary drainage plans as shown in the Preliminary Draft DESCP, and believes the proposed design adequately manages storm water during both construction and operation. Because the peak discharge of the 100-year, 24-hour storm event leaving the onsite detention basin is less during post-development conditions compared to pre-development conditions, staff agrees that PPEC would avoid significant adverse impacts which would result in offsite flooding. In addition, staff verified that the regional storm water system accounts for discharge from upstream contributing properties, including the PPEC site and surrounding areas.[7] Condition of Certification **SOIL&WATER-1** requires an approved DESCP prior to construction that reflects PPEC final drainage design and is consistent with the grading and drainage plan required in the **Facility Design** section of this PSA. In addition, Condition of Certification **SOIL&WATER-4** requires compliance with the San Diego County Municipal Storm Water Permit including a Hydromodification[8] Plan.

Vicinity Flood Hazards

Flood hazards include direct flooding due to overtopping of nearby rivers or streams resulting from severe rainstorms, or secondary flooding due to seismic activity creating tsunamis (tidal waves) or seiches (waves in inland bodies of water). To identify the different types of flood risks for a given location, various flood hazard maps were developed by the Federal Emergency Management Agency (FEMA) from comprehensive studies of statistical data for river flow, storm tides, hydrologic/hydraulic analyses, and rainfall and topographic surveys. Comparing the PPEC site location and final elevation (635 feet above mean sea level (msl)) to these maps:

- PPEC is not located within the 100-year floodplain as defined by FEMA.

[7] San Diego County Major Use Permit 98-001/L-15256 Plan Change #3 dated October 30, 2009.

[8] Hydromodification management is the management of post-project runoff flows and durations so that they are maintained to the levels of the pre-project condition.

- PPEC is not located within the expected flood area from failure of Savage Dam as shown on the dam inundation map. The closest flooding would occur roughly 1.5 miles away from the project site, cresting at approximately 400 feet above msl.
- PPEC is approximately eight miles away from expected coastal flooding from tsumanis, as shown by San Diego County's Tsunami Inundation Map.
- PPEC is approximately 2 miles away Lower Otay Reservoir and about 145 feet higher in elevation than the Savage Dam spillway. Based on the topography surrounding Lower Otay Reservoir, flooding due to seiches would not affect the PPEC site.

The proposed project would not effect, nor be effected by, the 100-year floodplain, dam failure, tsumani, or seiche. Staff agrees with the applicant that PPEC will not have significant impacts pertaining to these identified flood hazard areas. (For discussion on additional potential hazards that could be caused by soil failure such as mudflow, landslide and liquefaction, see the **Geology and Paleontology** section of this PSA.)

Soil Erosion Due to Water and Wind

Erosion during Construction

Soil losses would be created by construction and grading activities that would expose and disturb the soil and leave soil particles vulnerable to detachment by wind and water. Soil erosion results in the loss of topsoil and increases in sediment loading to nearby receiving waters or sewer systems. In the absence of proper BMPs, earthwork could cause significant fugitive dust and erosion.

The magnitude, extent, and duration of those impacts would depend on several factors, including weather patterns in the vicinity of the PPEC site, the types of soil that could be affected, and the method, duration, and time of year of construction activities. Prolonged periods of precipitation, or high intensity and short duration runoff events coupled with earth disturbance activities could result in accelerated onsite erosion. In addition, high winds during grading and excavation activities could cause wind borne erosion leading to increased particulate emissions that adversely impact air quality. The implementation of appropriate erosion control measures would help conserve soil resources, maintain water quality, prevent accelerated soil loss, and protect air quality.

<u>PPEC Project Site and Construction Laydown Area</u>

Project construction activities at the PPEC site, including site preparation, are estimated to be conducted during a 16-month period. Soil types in the proposed project site and laydown area fall under Hydrologic Soil Group D, having a very slow infiltration and high runoff potential when thoroughly wet, and Wind Erodibility Group 7, having a low potential for wind erosion. The preliminary grading plan shows total earth movement within the proposed site would be approximately 6,150 cubic yards of excavation (cut) material and 12,000 cubic yards of fill material. The cut and fill volumes are for surface grading only, and do not take into account excavations for major foundations and underground conduits for connections between the facility’s various equipment or structures. It is anticipated that that the excavated material will balance the cut and fill, and neither import nor export of soils will be required. Material suitable for backfill would

be stored in stockpiles at designated locations using proper erosion protection methods. The construction laydown area would not be paved, but gravel may be placed prior to use for the project (PPEC 2011a, PPEC 2011d).

The applicant submitted a preliminary draft DESCP that identifies, in general terms, the six groups of Best Management Practices (BMPs) categories that would be implemented to prevent or minimize soil erosion during construction activities. The specific BMPs that were identified in a drawing labeled Best Management Practices Plan are: check dams, silt fences, stabilized construction entrances, silt fence/fiber rolls (presumed for drainage inlet protection), rip rap (presumed for velocity dissipation of flow at culvert outlets), and a detention/sedimentation basin. The preliminary draft DESCP also states that a Construction Storm Water Sampling and Analysis Plan would be developed as part of a Storm Water Pollution Prevention Plan (SWPPP) to ensure performance standards and monitor the effectiveness of BMPs (PPEC 2011a).

Linear Facilities

Although the amount of excavation required to construct transmission line towers and to install pipelines would be relatively minor[9], soil disturbance associated with linear facilities could account for about 50 percent of total soil disturbance[10]. Activities such as clearing vegetation, excavation, and vehicle travel would present the highest potential for erosion. The runoff potential of the soils in the area of the linear facilities is high, and the water erosion hazard and wind erosion hazard are both low. The applicant states that the limited amount of soil disturbance associated with construction activities of these facilities would not result in significant impacts.

Although BMPs specific to linear facilities are not included in the preliminary draft DESCP, the applicant describes them in the AFC (PPEC 2011a, PPEC 2011p):

- BMPs during construction of transmission line pole footings would include erosion and sediment controls, and water course avoidance measures. Route A does not cross any water features. Route B spans a watercourse approximately 600 feet east of the project site that may be within Army Corp of Engineers jurisdiction[11]. Construction activities for new transmission line poles and footings will not occur within watercourses or Army Corp jurisdictional features, as Line Route B would aerially span across this feature. Any section of the transmission line constructed underground would be returned to preconstruction conditions.
- BMPs during construction of the natural gas line could include sediment trapping devices and limiting the amount of exposed areas in a given time. Once construction is completed, the ground surface would be returned to preconstruction conditions.

Staff estimated water-induced soil loss and wind erosion based on information given in the PPEC Application for Certification (PPEC2011a) and related supplemental material.

[9] Gas pipeline would be buried with a minimum of 36-inch cover (PPEC 2011a).

[10] Assuming 60 percent of the total area of all project elements (PPEC site, laydown area, and linear facilities) would be exposed during construction (PPEC 2011a).

[11] For further discussion on the Army Corp of Engineers jurisdictional determination of watercourses, refer to the **Biological Resources** section of this PSA.

Soil & Water Table 7 shows a summary of erosion estimates during construction for all proposed elements of the PPEC project. As discussed above, the industrial park developer graded the project site and adjacent laydown area during the spring of 2011, and the resulting topography is considered the project's site baseline conditions. The newly exposed material is "Otay Formation", which is rockier and less prone to erosion by water or wind than the native Diablo Clay soil present prior to site grading[12]. Erosion estimates for these areas in **Soil & Water Table 7** are conservative, but nonetheless show that implementation of BMPs will lower the potential for erosion.

Soil & Water Table 7
Summary of Erosion Calculations during Construction[1]

Project Element (acres exposed to erosion)[2]		**Due to Water[3]** (tons)	**Due to Wind[4]** (tons)
PPEC Site	with BMPs	13.97	4.2
	no BMPs	14.47	19.9
Laydown Area	with BMPs	3.23	1.4
	no BMPs	4.74	12.0
Gas Line[5]	Route A (1.78 acres)	0.09	0.9
	Route B (2.36 acres)	0.12	1.2
Power Line[5]	Route A (0.48 acres)	0.02	0.2
	Route B (0.61 acres)	0.03	0.3

Notes:
1. Assumes 1 month of grading followed by 15 months of construction. Also assumes soil is the Diablo Clay that was present prior to site grading of the baseline conditions.
2. Assumes approximately 50 percent of the PPEC site would be exposed during construction. Also assumes gravel is applied to the laydown area.
3. Estimates generated using RUSLE2 (version: 2.0.4.0).
4. Estimates generated using WEPS (version: 1.0_b468).
5. Assumes 2 months to construct each linear facility and additional 2 months to establish permanent cover.

Staff reviewed the preliminary draft DESCP and agrees that BMPs during construction would reduce or avoid impacts to soil from erosion. The conceptual plans for erosion control during construction appear reasonable, but there are additional elements that should be incorporated into the final DESCP that will be developed as required in Condition of Certification **SOIL&WATER-1**.

- The six groups of BMP categories listed in the draft DESCP are generally accepted as adequate to minimize or avoid soil erosion due to water and wind. However, the erosion control drawing that shows the locations of specific BMPs seem to focus more on sediment control (filtering or settling sediment particles out of water prior to offsite discharge) rather than erosion control (protecting the soil surface to prevent detachment of soil particles). In particular, staff is concerned with the existing large cut slope located at the east property line of PPEC. Although the use of sediment

[12] The USGS Geologic map of the Otay Mesa area describes Otay Formation as "poorly indurated massive light colored sandstone, siltstone and claystone, interbedded with bentonite lenses." For further discussion on the area's geological setting, refer to the **Geology and Paleontology** section of this PSA.

control BMPs as shown on the BMP Plan drawing would reduce the amount of soil loss during construction, combining these with erosion control BMPs would further reduce soil loss. For example, installing a silt fence at the bottom of the large cut slope would reduce soil loss by approximately 4 percent, but also installing a jute netting over the slope's bare soil could reduce soil loss an additional 50 percent,

- The draft DESCP currently includes only the PPEC project site and construction laydown area. The DESCP should identify the specific BMPs (with appropriate drawings and narrative) that would be used for the project, including all proposed alternative routes for the linear facilities.

Compliance with Condition of Certification **SOIL&WATER-1** would ensure protection of water quality and soil resources of the PPEC site and all linear facilities for both the construction and operation phases of the PPEC. In order to ensure these items identified above are addressed, Condition of Certification **SOIL&WATER-1** requires staff approval of the DESCP prior to start of site mobilization.

In addition, the project activities require that it be covered under the federal General Construction Permit (SWRCB Order No. 2009-0009-DWQ). To ensure compliance with this Order, the project should be required to comply with Condition of Certification **SOIL&WATER-2** which requires a construction Storm Water Pollution Prevention Plan (SWPPP). The SWPPP would specify BMPs that would prevent all construction pollutants including erosion products from contacting storm water, eliminate or reduce non-storm water discharges to waters of the United States, and provide for inspection and monitoring of BMPs. Also, Conditions of Certification in the **Air Quality** section of this PSA require a construction mitigation plan to prevent significant impacts from fugitive dust and wind erosion during construction. With implementation of BMPs and associated monitoring activities included in the approved DESCP and SWPPP, impacts on soil erosion would be expected to be less than significant during construction of the proposed project site.

Erosion during Operations

Soil losses would be ongoing after the PPEC is constructed. Areas disturbed during the construction phase are subject to potential erosion during the operational life of the proposed project. Once construction is completed, operation of the PPEC is expected to continue for 20 years.

PPEC Project Site

The project would increase the amount of impervious surface area from negligible to approximately 2.9 acres (PPEC 2011s), covered by concrete foundations and asphalt roadway paving. Conversely, the post-construction amount of non-impervious area would be approximately 7.09 acres, or about 71 percent of the total proposed site. The term non-impervious is used by staff in this context to emphasize that these open areas of soil, proposed to be disturbed during the construction phase, are subject to potential erosion during the operational life of the proposed project. Furthermore, adding impervious surfaces to an area previously undeveloped would decrease storm water infiltration and increase its runoff velocity. The presence of high velocity runoff would also increase the erosion potential of open soil areas.

Permanent erosion control measures would be implemented during project operation to prevent potential soil related impacts, including gravel, landscaping, and several vegetated drainage features. These are stabilized areas with very little or essentially no risk of erosion, which all would serve to prevent wind and water erosion and maintain some water infiltration capacity of the soil. In addition, the applicant proposes to develop an Industrial SWPPP that includes BMPs to protect against storm water impacts related to soil erosion and hazardous materials release including the preparation and implementation of spill contingency plans for hazardous materials storage areas. The Industrial SWPPP would include BMPs for refueling and maintenance of equipment, protection of hazardous materials from storm water exposure, and the reparation and implementation of spill contingency plans for hazardous materials storage areas.

Construction Laydown Area

Although the construction laydown area is not associated with operations of the PPEC project, areas disturbed during the construction phase are subject to potential erosion during the proposed project's operational life. The construction laydown area would not be paved during or after PPEC construction, but gravel may be placed prior to use as a laydown area.

Linear Facilities

The gas pipeline would be constructed underground using an open trench method. Backfilling would consist of returning excavated soil or slurry fill back into the trench on top of the pipe and up to the original grade of the surface. The backfill would be compacted to protect the stability of the pipe and minimize subsequent subsidence and the ground surface would be returned to preconstruction conditions (PPEC 2011a).

For the overhead power transmission lines, pole structures would be required for both alternate routes. The northern route (Route A) also includes a buried transmission line section of approximately 400 feet long. Any section of the transmission line constructed underground would be returned to preconstruction conditions (PPEC 2011a).

Staff estimated water-induced soil loss and wind erosion based on information given in the PPEC Application for Certification (PPEC2011a) and related supplemental material. **Soil & Water Table 8** shows a summary of erosion calculations during operations for all proposed elements of the PPEC project.

Soil & Water Table 8
Summary of Erosion Calculations Pre- vs. Post-Development

Project Element (acres exposed to erosion)		**Due to Water**[1] (tons/year)	**Due to Wind**[2] (tons/year)
PPEC Site	Pre-Development Facility Site (9 ac) Adjacent slope (1 ac) Total (10 ac)	 1.93 7.74 Total: 9.67	15.0
	Post-Development Facility Site (1 ac) Adjacent slope (1 ac) Total (2 ac)	 0.08 7.74 Total: 7.82	3.0
Laydown Area	Pre-Development Laydown (5.7 ac) Adjacent slope (0.3 ac) Total (6 ac)	 1.22 2.32 Total: 3.54	9.0
	Post-Development Laydown[3] (5.7 ac) Adjacent slope (0.3 ac) Total (6 ac)	 0.19 2.32 Total: 2.51	0.6
Gas Line[4]	Route A (1.78 ac)	0.16	0.2
	Route B (2.36 ac)	0.21	0.2
Power Line[4]	Route A (0.48 ac)	0.04	0.1
	Route B (0.61 ac)	0.05	0.1

Notes:
1. Estimates generated using RUSLE2 (version: 2.0.4.0).
2. Estimates generated using WEPS (version: 1.0_b468).
3. Assumes gravel is applied to the laydown area.
4. Linear facilities show post-development only because pre-development conditions assume negligible erosion potential due to native vegetation and/or impervious cover. Post-development acres exposed to erosion assumes 30 foot width with mulch application along the entire length of each linear facility.

As discussed above, the industrial park developer graded the project site and adjacent laydown area during the spring of 2011, and the resulting topography is considered the project site's baseline conditions. Because grading activities disturb and expose soil, the potential for soil erosion of the PPEC site is greater during pre-development compared to that of post-development conditions. This is not typical of a pre-development site that would contain naturally developed surficial soil armor and existing vegetative cover. Although any amount of soil stabilization would be an improvement over baseline conditions, permanent BMPs should be implemented to the maximum extent practicable to prevent or reduce soil erosion during PPEC operations.

Staff agrees that implementation and maintenance of permanent BMPs during operations would reduce or avoid impacts to soil from erosion and the release of hazardous materials. The draft DESCP is reasonable in concept, but there are additional elements that should be incorporated into the final DESCP that will be developed as required in Condition of Certification **SOIL&WATER-1**. In addition to the DESCP, the applicant would be required to comply with the following federal NPDES permit programs which are implemented at the state and local level and are designed to protect environmental resources from storm water pollution during project operation. A discussion and analysis of the applicability is provided below:

- A simple cycle facility such as the PPEC project is not typically subject to a Storm Water Permit for Industrial Activities[13], however the State Water Resources Control Board or the San Diego RWQCB could require compliance with the permit if deemed necessary for other reasons. Condition of Certification **SOIL&WATER-3** requires the project owner to comply with all requirements of the General NPDES Permit for Discharges of Storm Water Associated with Industrial Activity, including the development and implementation of an operational Storm Water Pollution Prevention Plan, unless otherwise documented that this permit is not required.
- Condition of Certification **SOIL&WATER-4** requires compliance with the San Diego County Municipal Storm Water Permit including a Stormwater Management Plan and Hydromodification Plan.
- The approved DESCP required in Condition of Certification **SOIL&WATER-1** also requires implementation and maintenance of erosion control BMPs during operations, including all alternate routes of linear facilities. Although the estimated post-development erosion of the PPEC site is less than pre-development, staff would require the use of permanent BMPs on the large slope located at the east property line which currently contributes to the majority of soil erosion. Furthermore, despite the fact that the construction laydown area is not associated with operations of the PPEC project, the approved DESCP should include a discussion of soil stabilization and other appropriate BMPs prior to this area's release from the project's use.

With implementation and maintenance of the BMPs detailed in the approved DESCP, Stormwater Management Plan, Hydromodification Plan, and Industrial SWPPP, staff believes there would be no significant impacts to soil resources during operation of PPEC.

Water Quality of Surface Waters

The PPEC project could have an adverse effect on water quality if discharges create pollution, contamination, or nuisance. Construction and operation of the PPEC project can impact the quality of surface waters by any of the following activities:

- Grading or clearing of land so that soil material is discharged into a receiving water body, drainage channel, or storm water conveyance system;

[13] For electric generating facilities, industrial storm water permits are required if fuel is burned to generate steam that is used to turn a generator. Simple cycle natural gas-fired combustion facilities are not one of the regulated industrial categories.

- Placing development in, or discharging material into, a river, stream, lake, wetland or water of the U.S.[14], or into a buffer area for one of these water bodies;
- Storing equipment, raw materials, finished products, or waste products in a manner that exposes them to precipitation and/or storm water runoff that is then discharged to a receiving water body, drainage channel, storm water conveyance system, ground surface, or subsurface;
- Discharging wastewater from an industrial or commercial process;
- Increasing impervious surface areas

To protect surface waters, standardized storm water and soil erosion Best Management Practices (BMPs)[15] have been determined by the State and Regional Water Boards to be the most effective, practical means of preventing or reducing pollution from nonpoint sources. The project addresses the potential causes listed above as follows:

- To prevent the discharge of soil material into a receiving water body, drainage channel, or storm water conveyance system, the PPEC would implement temporary BMPs during construction and permanent BMPs during operation to prevent soil erosion. (See the “Soil Erosion Due to Water and Wind” discussion above.)
- All proposed discharges of dredged or fill material by the PPEC site would occur outside the high water mark, and therefore, outside any potential waters of the U.S. (PPEC 2011a). However, construction of transmission line Route B could impact a drainage that could be identified as waters of the U.S. To avoid temporary or permanent impacts or losses to special aquatic resources, the project would implement a Biological Resources Mitigation Implementation and Monitoring Plan and assign a Designated Biologist to monitor the project, including the transmission line pole construction. (Refer to the **Biological Resources** section of this PSA.)
- To prevent potentially contaminated runoff[16] from discharging offsite, a Stormwater Management Plan and Hydromodification Plan for operations would be prepared in accordance with the County of San Diego Watershed Protection, Stormwater Management and Discharge Control Ordinance (WPO) requirements and would include BMPs to protect water resources.
- To prevent the discharge of untreated industrial wastewater or untreated sanitary wastewater from entering surface waters, the PPEC would transport industrial wastewater offsite to Pump Station No. 1 and discharge sanitary waste to the existing East Otay Mesa Sewer Maintenance District sewer system for treatment and disposal. (See “Operations Wastewater” discussion below.)
- To avoid collection and concentration of pollutants in storm water runoff caused by increasing impervious surface areas, the PPEC’s preliminary drainage plan

[14] For further discussion on the Army Corp of Engineers jurisdictional determination of wetlands or watercourses as a water of the U.S., refer to the **Biological Resources** section of this PSA.

[15] 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.

[16] Stormwater in contact with exposed polluted or hazardous materials and/or surfaces can potentially result in contaminated runoff.

proposes to treat noncontact storm water runoff in a system of swales and a detention basin prior to discharge into the storm water drainage system for both construction activities and operations. (See “Onsite and Offsite Area Flooding” discussions above.)

Staff agrees that implementation and maintenance of BMPs during construction and operation of the PPEC project would reduce or avoid impacts to the quality of downstream surface waters. Lists of standard BMPs are extensive and should be chosen by analyzing the potential pollutants from the project, evaluating the beneficial uses and other characteristics of receiving waters, evaluating the physical characteristics of the project site, considering the economic feasibility of installing and maintaining BMPs, and complying with any specific regulatory requirements.

Conditions of Certification **SOIL&WATER-1**, **-2**, **-3**, and **-4** would minimize the potential for increased sediment or contaminants to be conveyed offsite by implementing a variety of BMPs during PPEC construction and operation. Hazardous materials would also be handled in accordance with applicable BMPs. Condition of Certification **WASTE-7** (refer to the **Waste Management** section of this PSA) would require the project owner/operator to report, clean up, and remediate as necessary, any hazardous materials spills or releases. Condition of Certification WORKER SAFETY-2 (refer to the **Worker Safety and Fire Protection** section of this PSA) would require a Hazardous Materials Management Program. Condition of Certification **BIO-7** (refer to the **Biological Resources** section of the PSA) would minimize the potential impacts to potential waters of the U.S. by implementing appropriate BMPs consistent with applicable regulatory requirements. Staff recommends the compliance with Conditions of Certification **SOIL&WATER-7** and **-8** which would ensure that contaminated flows are diverted from surface waters and properly discharged through a wastewater discharge permit (see "Wastewater" discussion below). Staff believes the project’s compliance with these Conditions of Certification would not result in significant impacts to water quality during construction and operation of PPEC and associated linear facilities.

Groundwater

PPEC does not propose the use of any groundwater. The project’s proposed water sources are recycled water and potable water, both supplied from the Otay Water District (PPEC 2011a, PPEC 2011k). The groundwater table elevation in the vicinity of the project site is below 580 feet above msl[17], which is at least 55 feet below the PPEC’s site final elevation of 635 feet above msl (PPEC 2011a). This vertical separation between the groundwater and project excavations and other construction activities suggests there is low potential for impacts on groundwater levels and quality[18]. In addition, all potentially contaminated waste water, including sanitary waste, process wastewater, and contact storm water runoff, would be discharged into the existing sewer system or transported by tanker truck offsite for treatment at a wastewater

[17] Appendix G, Geotechnical Engineering Investigation. URS Greiner Woodward Clyde, August 1999. Application for Certification Otay Mesa Generating Project.

[18] In the County of San Diego, a ten foot separation is recommended between surface infiltration and the top of the groundwater table in order to allow sufficient biological activity and filtration to occur. (SDC2007)

treatment plant. As a result, impacts to groundwater quality from exposure of these types of waste water would be avoided.

PPEC would not result in groundwater overdraft, low well yield, well interference, poor groundwater quality, or a decrease in the amount of groundwater recharge. Staff agrees with the applicant that PPEC would not significantly impact the local groundwater level or groundwater quality.

Water Supply

Potable Water Supply

PPEC proposes to use recycled water as its primary source of cooling and process water. Since recycled water is currently not available at the project site, PPEC will rely on currently available potable water provided by OWD. The calculated interim potable demand for facility operation is expected to be approximately 311 afy. When domestic use water is added, the total potable water demand would be 312 afy.

OWD prepared a Water Supply Assessment Report for the PPEC that projected potable demand and supply requirements for current and future users. The report includes, among other information, an identification of existing water supply entitlements, water rights, water service contracts, water supply projects, or agreements relevant to the indentified water supply needs for the proposed PPEC project. The report projected demand and supply requirements adjusted to reflect an additional 372 afy[19] of potable water demand for the PPEC project. As a final conclusion, the report documents that sufficient water supplies are planned for and are intended to be available over a 20-year planning horizon, under normal conditions and in single and multiple dry years to meet the projected demand of the proposed PPEC project and the existing and other planned development projects to be served by OWD (OWD 2011).

Based on the information presented in OWD's Water Supply Assessment Report, staff agrees that the proposed project would not significantly impact the local potable water supply. To ensure that PPEC's potable water usage does not exceed the values used for the Water Supply Assessment Report, staff recommends Condition of Certification **SOIL&WATER-5**. In addition, Condition of Certification **SOIL&WATER-5** requires that PPEC convert to recycled water when available.

Recycled Water Supply

Currently, recycled water is unavailable in the Otay Mesa area. At the time the PPEC project application was written, the applicant expected recycled water would be available by the estimated commercial online date in May 2014. Staff learned through direct communication with OWD and a subsequent technical workshop on August 24, 2011 that a number of issues have delayed the availability of recycled water and a definitive date is unknown at this time. The following elements must be completed before OWD could provide a reliable recycled water supply for PPEC operations:

[19] After the Water Supply Assessment Report was finalized, the applicant revised PPEC's estimated amount of annual potable water use to 312 afy (PPEC 2011s).

- OWD must construct the infrastructure to physically deliver recycled water to the project site.
- OWD must secure additional recycled water to meet the expected demands of expanding the service area.
- OWD must update its Master Reclamation Permit and meet other regulatory requirements in order to provide PPEC with recycled water.

Required Infrastructure

As discussed above (see "Local Water Supplies"), OWD currently delivers recycled water to the eastern part of Chula Vista. OWD's plans to expand its recycled water system into the Otay Mesa area include the construction of a 24-inch transmission main pipeline and pressure-reducing station, known as the Wueste Road Pipeline project, which would be located approximately two miles north of the PPEC site. The new pipeline, approximately 2.5 miles long, would bridge the gap between an existing pipeline that currently delivers recycled water in Chula Vista and an existing 30-inch pipeline in Otay Mesa that was previously installed in anticipation of the eventual availability of recycled water. This 30-inch existing pipeline is located directly adjacent to the property line of the PPEC site and would readily deliver recycled water to the proposed site (PBSJ 2010).

OWD included the Wueste Road Pipeline project and other similar recycled water expansion projects in their 2009 Capital Improvement Program (PBSJ2010). The Environmental Impact Report was prepared for the Wueste Road Pipeline project and fully developed project plans were produced with final permits to soon follow, but OWD halted the process toward construction because of a reluctance to take on construction costs without confidence their recycled water supply would meet peak demands[20]. The applicant indicated willingness to fund the up-front costs of construction for the Wueste Road Pipeline project, with partial reimbursement[21] as construction milestones are achieved (PPEC 2011k). Because a source of additional recycled water is not yet secured, OWD did not want to incur this debt to the applicant without assurance of a supplemental recycled water supply from the City of San Diego.

Required Supply Increase

In order to provide the Otay Mesa area with recycled water, OWD must first increase its supply of recycled water. The reclamation facility owned by OWD regularly produces its maximum capacity of recycled water. Although additional supplies from SBWRP has increased output to OWD customers by up to three times, supplies are barely enough to meet summer peak demands for OWD’s current recycled water service area. Expanding

[20] Although the 2003 agreement between OWD and the City of San Diego includes an annual amount of up to 6 million gallons per day (mgd) of recycled water, SBWRP produces only enough recycled water to meet OWD's near-term demands. During hot summer months, SBWRP delivers upwards of 7 mgd for multiple days when demands spike. During the winter when demand is typically much lower, SBWRP may produce and deliver to OWD a quarter of the peak amount or less.

[21] Similar to OWD’s current reimbursement process allowing repayment of certain costs to a developer required to provide offsite facilities or oversizing of facilities which are to become part of the district system. (Otay Water District Code of Ordinances Adopted by Ordinance No. 310 effective October 15, 1984)

recycled water service to the Otay Mesa area would require additional supplies, particularly during hot summer months when the PPEC would mostly operate.

A very likely source of this additional recycled water is the SBWRP. Under the 2003 agreement between OWD and the City of San Diego, SBWRP is contracted to supply an annual amount of up to 6 mgd of recycled water to OWD. Although SBWRP's rated wastewater treatment capacity is 15 mgd, the facility can only deliver a maximum of approximately 7 mgd of recycled water due to the limited amount of influent flowing into the facility. Water recycling is the treatment and disinfection of municipal wastewater, and increasing the production of recycled water requires an increase in wastewater influent to treat for reuse. Although the amount of wastewater influent is obtainable, SBWRP must upgrade its collection facilities to convey these additional flows for treatment.

Staff also understands the City of San Diego is currently conducting a financial analysis of their recycled water supply to determine future pricing and contracting for delivery. Once this study is completed, OWD plans to negotiate a new recycled water supply agreement with the City of San Diego that would allow them to expand their recycled water service area, including PPEC and other customers in Otay Mesa. The time frame for completion of this study and how the City of San Diego may contract for its supply is currently unknown.

Talks between OWD and the City of San Diego regarding increased recycled water supplies are slow. Multiple stakeholders, long-term economics, and regulatory issues add to the complexity of this issue. While both parties are open to discuss a potential agreement, no timeline is set on the negotiations. In an effort to encourage timely availability of recycled water for PPEC, the applicant voluntarily offered to incentivize an agreement between OWD and the City of San Diego[22]. If an agreement is reached by the start of PPEC's operation, currently estimated for May 2014, the applicant would contribute $1,250,000 to OWD for the Wueste Road Pipeline project and $250,000 to the City of San Diego for upgrades to increase influent flow at SBWRP. This offer assumes that recycled water availability to the PPEC site would follow within an expected timeframe. Specifics of the offer are currently under discussion, and final details would be between the applicant, OWD, and the City of San Diego. If an agreement is reached in the near future, staff will include a discussion in the Final Staff Assessment.

In the event that talks between OWD and the City of San Diego are unsuccessful, OWD has indicated that other recycled water sources would be pursued. One potential option is a partnership with the City of Chula Vista to construct a 5 to 6 mgd regional water reclamation facility to produce more recycled water while meeting local wastewater treatment needs. Another potential option is the South Bay International Wastewater Treatment Plant, a 25 mgd secondary treatment level facility located on the U.S. side of the Mexican border, which may in the future convert to a tertiary level facility able to produce recycled water. These alternative sources, however, would delay the availability of recycled water to the PPEC project indefinitely.

[22] This discussion occurred during the Preliminary Staff Assessment Workshop held on August 24, 2011 at Chula Vista City Hall.

Staff notes that if any of these supplies are delayed, the project could use potable water for some extended period of time or even for the life of the project. As mentioned in the Potable Water Supply discussion above, the Water Supply Assessment reports that sufficient potable water supplies are planned for and intended to be available to meet the project and future demands. The ability of OWD to meet these demands, however, is also based on the availability of additional water supplies, including recycled water, and implementation of as yet defined or implemented water conservation programs to offset future demands.

Regulatory Requirements

The use of recycled water in the San Diego area is regulated by the San Diego Regional Water Quality Control Board (RWQCB) and the California Department of Public Health (CDPH). The two principal regulatory documents are the "Comprehensive Water Quality Control Plan Report, San Diego Region (9)" (Basin Plan), and the "Wastewater Reclamation Criteria, an excerpt from the California Administrative Code, Title 22, Division 4, Environmental Health" (Title 22). The Basin Plan requirements vary by hydrographic subunits. Title 22 requirements are uniformly applied wastewater treatment requirements based on the intended use of the produced recycled water.

The current Master Reclamation Permit (Order R9-2007-0038) for the existing recycled water supply was issued to OWD and is enforced by the San Diego RWQCB and CDPH. The permit allows OWD to distribute its recycled water supply and places restrictions on which areas recycled water can be used within OWD's boundaries based on the local surface and groundwater beneficial uses and water quality objectives of the hydrologic areas (PBSJ 2010). OWD is not currently allowed to deliver recycled water to the Otay Mesa area[23]. The Master Reclamation Permit would need to be revised to include the new service area and new use of the recycled water to the PPEC site.

In addition, Title 22 requires the submission of an engineering report to the RWQCB and CDPH and approval from CDPH before recycled water projects are implemented. The engineering report would describe the production, distribution, and use of recycled water, and would be prepared by a properly qualified California registered engineer experienced in the field of wastewater treatment. The report would verify whether the recycled water supply meets the standards for unrestricted use and whether the plumbing constructed for PPEC is designed for prevention of backflow and cross connection with the potable water supply. Staff recommends Condition of Certification **SOIL&WATER-6** to ensure compliance with CDPH requirements.

Regional Supply

OWD's recycled water distribution system is currently limited to only a portion of its service area, delivering recycled water mainly to the eastern part of the City of Chula Vista where it is used mostly for landscape and golf course irrigation. In 2010, approximately 4,075 afy of recycled water was supplied to existing recycled water users

[23] The current permit allows recycled water use at sites located in the following Hydrographic Areas (HA) and Subareas (HSA): Telegraph HSA, La Nacion/Sweetwater River HSA, the Salt Creek portion of Otay Valley HA, and Tijuana Valley HA.

(Atkins 2011). The identified potential future uses for recycled water are shown in **Soil & Water Table 9**.

Soil & Water Table 9
Recycled Water Potential Future Use (afy)

User Type	Description	2015	2020	2025	2030
Landscape Irrigation*	OWD's northern area	250	500	750	1000
Commercial Irrigation*	Otay Mesa area (irrigation)	300	753	1205	1658
Energy Plants**	Otay Mesa area (Calpine and Pio Pico Energy Plants)	564	564	564	564
Total		1114	1817	2519	3222

* Based on OWD's ultimate projections and distributed from 2015 through 2030 (Atkins 2011).
** Estimate 250 afy use by the Calpine facility in addition to 314 afy use by PPEC.

As mentioned above, the availability of recycled water to the PPEC project is contingent on OWD's assurance of a source that would reliably meet peak demand and specific water quality standards. In addition, OWD's supply, present and future, is not considered subject to reduction due to poor water quality and recycled water supply is assumed to be drought-proof and not subject to reduction during dry periods (Atkins 2011).

Staff believes the PPEC recycled water demands would not have any adverse effect on the total quantity or the peak amount of supply available to other existing or prospective customers of OWD. The proposed use of recycled water is a desirable and efficient use of water and would reduce the discharge of treated wastewater to the Pacific Ocean.

Wastewater

Construction Wastewater

Improper handling or containment of construction wastewater could cause a broad dispersion of contaminants to soil, surface waters, or groundwater. For example, hydrostatic testing of new pipeline can result in discharge of super-chlorinated water often used for the initial disinfection. Other constituents of concern include total dissolved solids (TDS) and total suspended solids (TSS).

During the construction period, all sanitary waste would be collected in portable toilets (no discharge) supplied by a licensed contractor for collection and disposal at an appropriate receiving facility. Construction wastewater would be comprised only of water used for hydrostatic testing, because construction water used for dust control and soil compaction would not discharge offsite. Wastewater from hydrostatic testing would be discharged to the existing East Otay Mesa Sewer Maintenance District sewer system (PPEC 2011a).

Staff recommends Condition of Certification **SOIL&WATER-7** requiring PPEC project to obtain and meet requirements of the East Otay Mesa Sewer Maintenance District prior to discharge into the sanitary sewer. Provided the PPEC project complies with the District's requirements, staff concludes that the project's proposed management and disposal of wastewater during construction would not result in any significant impact.

Sanitary Waste

Sanitary waste would be discharged to the existing East Otay Mesa Sewer Maintenance District sewer system. Flow would then be conveyed through the existing system to the San Diego Metro sewage system for treatment and disposal. The peak daily wastewater discharge from PPEC will be approximately 0.003 mgd, or approximately 0.3 percent of the East Otay Mesa Sewer Maintenance District's 1.0 mgd allotment and substantially less than one percent of the wastewater treatment capacity at the SBWRP (PPEC 2011s). Staff agrees that by meeting the connection requirements of the East Otay Mesa Sewer Maintenance District (San Diego County Ordinance No. 9146), the impacts PPEC's sanitary waste would be less than significant.

Operations Wastewater

The wastewater generated by the PPEC project during operations would be transported offsite with tanker trucks to the City of San Diego's Pump Station No. 1, the only regional facility for hauled liquid industrial waste. The applicant received a will serve letter from the City of San Diego indicating that they will have capacity to accept and treat a wastewater flow (PPEC 2011s). Based on the will serve letter staff believes that there would be sufficient treatment capacity to handle the wastewater generated by the proposed project. Additionally, staff believes that by meeting the requirements of the Trucked Industrial Waste Generator Permit set by the City of San Diego, the impact of the proposed project on existing wastewater treatment systems and water quality downstream of the site would be less than significant. Staff recommends Condition of Certification **SOIL&WATER-8** requiring PPEC to obtain and meet the requirements of a Trucked Industrial Waste Generator Permit set by the City of San Diego.

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.

Localized Flooding and Soil Erosion

The PPEC project would not alter existing offsite drainages pattern such as the course of a stream or river. No surface water features (intermittent or continuous) currently cross nor would cross any portion of the proposed PPEC site or the construction laydown area. Based on the topography of the proposed site and the surrounding areas, the PPEC would not cause offsite flooding to areas upstream of the proposed site. In addition, onsite drainage is designed to prevent or minimize offsite flooding downstream of the site. Because the project will not indirectly result in significant offsite flooding, the damaging effects of excess storm water flows would also be minimized and result in no indirect impacts causing offsite soil erosion. Also, the baseline site condition of open bare soil (graded by the industrial park developer) does not provide any type of wind protection to offsite locations, and therefore would not change after construction of the PPEC project.

Flood Hazards

Construction or operation of a power plant at the proposed location would not result in the construction of additional structures that would place people or structures within a

flood hazard area (100-year floodplain or areas at risk of tsunami, seiches, or dam inundation). The PPEC would not have any indirect impacts pertaining to these flood hazards.

Water Quality of Surface Waters

Construction or operation of the PPEC project would not result in additional facilities or activities that would discharge into surface waters. In fact, the project's proposed use of recycled water would reduce the discharge of treated wastewater to the Pacific Ocean.

Groundwater Quality or Supplies

Since OWD has no local supply of raw water, potable water or groundwater resources, it expects to meet projected demands for potable water from imported water. The two primary sources of imported water to the region come from the Colorado River Aqueduct and the California Aqueduct (PBSJ 2010). The PPEC's use of potable and recycled water would not increase the groundwater use by other OWD customers and would not affect the groundwater quality.

Water Supply and Wastewater

Each new municipal facility constructed, such as a power plant, could 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 PPEC would not encourage people to permanently move into the area. Based on this information, the PPEC would not indirectly result in a significant increase of water and wastewater utility customers. In regards to recycled water, the PPEC project may accelerate the availability of recycled water to the East Otay Mesa area, but an increased use of recycled water would be from existing customers already located in the area.

CUMULATIVE IMPACTS AND MITIGATION

A project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of reasonably foreseeable future projects (California Code of Regulations, Title 14, section 15130). The construction and operation activities of the various projects could potentially overlap and result in cumulative impacts to the same resource(s).

Water Quality

As identified in the **Land Use** section of this PSA, six projects in the vicinity of the proposed PPEC have been approved, are under review, or in operation (see **Land Use Table 3** and **Land Use Figure 4**). These projects have the potential 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 Water Quality Plan for the San Diego Basin (Basin Plan), the proposed PPEC project would avoid or substantially lessen the cumulative problem[24]. PPEC project's contribution would not be "cumulatively considerable" and, thus, not significant.

Potable Water Supply

If the PPEC uses potable water in lieu of recycled water, it would consume a maximum of approximately 311 afy of potable water. This is 0.8 percent of the 40,000 afy of potable water that OWD distributes to its customers. Although the amount is individually minor, when added with present and future potable water users could lead to significant impacts to potable water supplies. Since OWD has no local supply of raw water, potable water or groundwater resources, it expects to meet projected demands for potable water from imported water. OWD prepared a Water Supply Assessment Report for the PPEC that projected potable demand and supply requirements for current and future users. As a final conclusion, the report documents that sufficient water supplies are planned for and are intended to be available over a 20-year planning horizon, under normal conditions and in single and multiple dry years to meet the projected demand of the proposed PPEC project and the existing and other planned development projects to be served by OWD (OWD 2011). Because the reports accounts for both current and futures users of potable water, staff agrees that the PPEC project's contribution would not be "cumulatively considerable" and, thus, not significant.

COMPLIANCE WITH LORS AND STATE POLICY

SWRCB RESOLUTIONS 75-58, 77-1, 2009-0011, ENERGY COMMISSION'S 2003 INTEGRATED ENERGY POLICY REPORT, AND THE WARREN-ALQUIST ACT

California state policy supports the use of recycled water for industrial use. At the same time, the state's policies discourage the use freshwater (surface water) and groundwater for industrial purposes. The California Energy Commission, under legislative mandate specified in the 2003 Integrated Energy Policy Report (IEPR), would approve the use of fresh water for power plant cooling purposes only where alternative water supply sources and alternative cooling technologies are shown to be environmentally undesirable or economically unsound. SWRCB Resolution 75-58 states that fresh inland waters should only be used for power plant cooling if other sources or other methods of cooling would be environmentally undesirable or economically unsound. The Warren-Alquist Act promotes all feasible means of water conservation (California Public Resources Code, Division 15, Section 25000 et seq.). SWRCB Resolution 77-1 promotes the use of reclaimed water for non-potable uses and to supplement existing surface and groundwater supplies. SWRCB Resolution 2009-0011 promotes the use of reclaimed water as a means to achieve sustainable local water

[24] 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).)

supplies and to reduce greenhouse gases. Consistent with these policies the proposed PPEC would use reclaimed water when available for its construction and operations water demand.

Staff notes that if any of these supplies are delayed, the project could use potable water for some extended period of time or even for the life of the project. As mentioned in the Potable Water Supply discussion above, the Water Supply Assessment reports that sufficient potable water supplies are planned for and intended to be available to meet the project and future demands. The ability of OWD to meet these demands, however, is also based on the availability of additional water supplies, including recycled water, and implementation of as yet defined or implemented water conservation programs to offset future demands.

If recycled water availability is delayed indefinitely, then in the final staff assessment staff would have to further evaluate whether extended use of potable water for power plant cooling and operation is consistent with State water policy. In the event staff believes it is not consistent with the water policy, staff may recommend that the applicant be required to implement a water conservation program that would offset the project potable water use on an annual basis similar to other recent power plant cases.

CLEAN WATER ACT AND SWRCB 2009-0009-DWQ, 97-03-DWQ

The Clean Water Act (CWA) (33 USC, section 1257 et seq.) requires states to set standards to protect water quality, which include regulations of storm water and wastewater discharge during construction and operation of a facility. California established its regulations to comply with the CWA under the Porter-Cologne Water Quality Control Act. The SWRCB regulates storm water discharges associated with construction of projects affecting areas greater than or equal to 1 acre. Under Order 2009-0009-DWQ, the SWRCB has issued a National Pollutant Discharge Elimination System (NPDES) General Permit for storm water discharges associated with construction activity, and Order 97-03-DWQ is for storm water discharges associated with industrial activity. Projects can qualify under these permits if specific criteria are met and an acceptable Storm Water Pollution Prevention Plan (SWPPP) is prepared and implemented after notifying the SWRCB with a Notice of Intent.

The PPEC would satisfy the requirements of the RWQCB and SWRCB 2009-0009-DWQ with the development of a DESCP in accordance with Condition of Certification **SOIL&WATER-1,** the development of a construction SWPPP in accordance with **SOIL&WATER-2**, and development of an industrial SWPPP in accordance with **SOIL&WATER-3**. In addition, all storm water from 100-year or less storm events entering the PHPP site from offsite sources would be retained on the PHPP site.

CALIFORNIA CODE OF REGULATIONS TITLE 17 AND 22, AND CALIFORNIA WATER CODE SECTION 13523

These California Code of Regulations (CCRs) and Water Code sections are to protect the public health, safety, and welfare. Section 13523 requires the RWQCB to prescribe water reclamation requirements for water that is, or proposed to be, used as reclaimed water. These requirements may be placed upon the entity reclaiming the water and the

user of the water. These requirements are to be developed by the RWQCB after consultation with and receipt of recommendations from California Department of Public Health (CDPH) and any party who has requested in writing to be consulted. Through compliance with Condition of Certification **SOIL&WATER-6**, the CDPH would review and comment on the Engineering Report and Cross Connection inspection results for the transmission and use of recycled water. Recycled water use and handling would be required to comply with the requirements specified in Title 22. Backflow prevention and possible cross connections between potable and non-potable water lines would be required to comply with the requirements specified in Title 17.

CALIFORNIA WATER CODE SECTIONS 10910 TO 10915 (SENATE BILL 610 OF 2001)

These sections of the California Water Code were amended in 2001 requiring public water systems to prepare a water supply assessment (WSA) for certain defined development projects subject to CEQA. Lead agencies determine, based on the WSA, whether protected water supplies will be sufficient to meet project demands along with the region's reasonably foreseeable cumulative demand under average-normal-year, single-dry-year, and multiple-dry-year conditions. The Otay Water District prepared a WSA for PPEC in conformance of Sections 10910-10915 that documents and demonstrates sufficient potable water to supply PPEC. The WSA was approved by OWD's Board of Directors on October 5, 2011.

CALIFORNIA CODE OF REGULATIONS TITLE 20, DIVISION 2, CHAPTER 3, ARTICLE 1

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 Condition of Certification **SOIL&WATER-5** and **-8**, PPEC would provide the required data for water use and wastewater disposal, respectively.

CALIFORNIA WATER CODE SECTION 13550 AND 13575 ET SEQ. (WATER RECYCLING ACT)

These sections of the California Water Code require that the water resources of the State be put to the highest possible beneficial use and prohibit the use of potable domestic water for non-potable uses if recycled water is available. Within these sections, use of potable domestic water for industrial cooling towers is identified as a waste or unreasonable use of water if suitable recycled water is available. With the use of recycled water for PPEC operation processes, the PPEC would be fully compliant with this section of the water code and public resources code. Staff proposes Condition of Certification **SOIL&WATER-5** to ensure that recycled water would be used, when available, for the PPEC construction and plant operation processes.

RWQCB SAN DIEGO REGION ORDER NO R9-2007-01 AND SAN DIEGO COUNTY CODE ORDINANCES 10096 AND 9547

The RWQCB San Diego Region Order No. R9-2007-01 is the San Diego Municipal Stormwater Permit requiring protection of water resources and improved water quality. These San Diego County Code Ordinances implement the Municipal Stormwater Permit by requiring new development projects to develop plans to manage increases in runoff discharge rates and durations. Staff proposes Condition of Certification **SOIL&WATER-4** to ensure that PPEC would comply with the San Diego County Municipal Storm Water Permit by requiring a Stormwater Management Plan and Hydromodification Plan, as required by the County of San Diego Watershed Protection, Stormwater Management and Discharge Control Ordinance (WPO).

SAN DIEGO COUNTY CODE ORDINANCE 9146 AND CITY OF SAN DIEGO MUNICIPAL CODE 64.0500 ET SEQ.

This County ordinance specifies development fees, agreements, and requirements for the East Otay Mesa Sewer Maintenance District, and the City's municipal code specifies requirements to discharge industrial waste into their public sewer system. Staff proposes Condition of Certification **SOIL&WATER-8** requiring PPEC to obtain and meet the requirements of a Trucked Industrial Waste Generator Permit set by the City of San Diego.

FACILITY CLOSURE

PPEC is contracted under a 20-year power purchase agreement with SDG&E and is designed for an operating life of 30 years (PPEC 2011a). Facility closure can be either temporary or permanent, and closure options range from "mothballing," with the intent of a restart at some time, to the removal of all equipment and facilities. Closure can result from two circumstances: (1) the facility is closed suddenly and/or unexpectedly because of unplanned events, such as a natural disaster or economic forces or (2) the facility is closed in a planned, orderly manner, such as at the end of its useful economic or mechanical life or due to gradual obsolescence.

In the event of a temporary or unplanned closure, Condition of Certification **HAZ-2** requires an emergency Risk Management Plan to manage the possible release of hazardous substances present onsite. Depending on the expected duration of the shutdown, other appropriate measures would be taken such as removing chemicals from storage tanks or equipment.

Permanent closure (decommissioning) requires a Facility Closure Plan, as discussed in the **Facility Design** and **General Conditions** sections of this PSA, which would be submitted to the Energy Commission for approval prior to decommissioning. Future conditions that could affect decommissioning are largely unknown at this time, however compliance with all applicable LORS, and any local and/or regional plans would be required. The plan would address all concerns in regard to potential erosion and impacts on water quality.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Agency and public comments were received relating to soil and water resources and have been incorporated into this PSA section. These comments and staff's responses are presented below.

U.S. Customs and Border Protection
August 8, 2011

Comment: It would be preferential if the storm drains identified (no dimension or specifications) and associated with the project were planned and developed to have grates installed on the exterior that allow for proper flow rate and drainage while providing a physical deterrent to entry by humans. Once cleared from design and planning a copy of the storm drain system layout and/or schematic would be requested. Minimizing any and all culverts and exposed drainage runs is requested. Criminal enterprises and subjects exploit subterranean structures for concealment and entry points, as well as readymade starter tunnels to facilitate subterranean criminal activity. Schematics for north-south running, underground trenching which will extend to/from the border would be appreciated; especially areas that will remain open or exposed during and after all phases of construction.

Response: Most of the information requested is found in Appendix I-3 of the AFC. The Stormwater Plan (Drawing No. P009-041-CM-005) is a preliminary plan sheet that shows locations of all underground drainage pipes and manholes labeled with size and material type. Another drawing (no drawing number) is the detention basin cross-section showing a 48-inch corrugated steel pipe riser that conveys flow offsite through a 30-inch reinforced concrete pipe. The basin riser is fitted with a trash rack, but does not indicate its material or grate size.

For proposed locations of gas pipeline are shown on **Project Description - Figure 4, Alternative Routes for Natural Gas Line**. SDGE, and its contractors, would install the gas pipeline by excavating a four foot wide trench prior to laying the pipe, then backfilling the trench.

Staff will forward these requests to the applicant to provide the U.S. Customs and Border Protection with a preliminary and final layout and/or schematic diagram.

CONCLUSIONS

Based on the assessment of the proposed PPEC project, Energy Commission staff finds that:

- Implementation of Best Management Practices (BMPs) during the PPEC construction and operation in accordance with a Drainage, Erosion, and Sediment Control Plan (DESCP), construction Storm Water Pollution Prevention Plan (SWPPP), industrial SWPPP, the Stormwater Management Plan (SMP) and the Hydromodification Plan (HMP) required pursuant to **SOIL&WATER-1**, **-2**, **-3**, and **-4** would avoid potential adverse erosion and flood impacts to onsite structures, adjacent properties, and water quality.

- The use of recycled water for operation processes and potable water for operation drinking water and sanitation would be in compliance with state water use policy and would have no adverse environmental impact provided the requirements of Conditions of Certification **SOIL&WATER-5** and **-6** are met.
- Staff supports the applicant's voluntary offer to incentivize an agreement between Otay Water District and the City of San Diego facilitating timely availability of recycled water for PPEC. However, if recycled water availability is delayed indefinitely, then the final staff assessment would further evaluate whether extended use of potable water would be consistent with State water policy. Other alternative measures or offsets may be appropriate on at least an interim basis until recycled water is available.
- In the event recycled water is not available for operation processes, the PPEC would use currently available potable water. A Water Supply Assessment Report for the PPEC documents that sufficient potable water supplies are planned for and are intended to be available over a 20-year planning horizon to meet the projected demand of the proposed PPEC project and existing and other planned development projects.
- The discharge of sanitary waste to the East Otay Mesa Maintenance District sewer system and process wastewater to the City of San Diego's Pump Station No. 1 industrial wastewater disposal facility would ensure appropriate treatment and disposal of wastewater and would be in compliance with applicable federal, state, and local laws, ordinances, regulations, and standards (LORS) and would have no adverse environmental impact provided the requirements of Conditions of Certification **SOIL&WATER-7** and **-8** are met.
- The proposed project would comply with all applicable federal, state, and local LORS with the adoption of the recommended conditions of certification.
- Construction and operation of PPEC would not result in project-specific or cumulatively significant impacts to soil or water resources with the adoption of the recommended conditions of certification.

PROPOSED CONDITIONS OF CERTIFICATION

DRAINAGE EROSION AND SEDIMENTATION CONTROL PLAN

SOIL&WATER-1: The Pio Pico Energy Center (PPEC) owner shall submit to the Compliance Project Manager (CPM) for approval a site specific DESCP that ensures protection of water quality and soil resources of the PPEC site and all linear facilities for both the construction and operation phases of the PPEC. This plan shall address appropriate methods and actions, both temporary and permanent, for the protection of water quality and soil resources, demonstrate no increase in off-site flooding potential, and identify all monitoring and maintenance activities. The PPEC owner shall complete all necessary engineering plans, reports, and documents necessary for the CPM to conduct a review of the PPEC and provide a written evaluation as to whether the proposed grading, drainage improvements, and flood management activities

comply with all requirements presented herein. The plan shall be consistent with the grading and drainage plan condition of certification in the **Facility Design** section of the Final Staff Assessment and shall contain the following elements:

Vicinity Map: A map shall be provided indicating the location of all PPEC elements (including service utilities and the generator transmission line) with depictions of all significant geographic features to include watercourses, washes, irrigation and drainage canals, major utilities, and sensitive areas.

Site Delineation: The site and all PPEC elements (including service utilities and the generator transmission line) shall be delineated showing boundary lines of all construction areas and the location of all existing and proposed structures, underground utilities, roads, and drainage facilities. Adjacent property owners shall be identified on the vicinity map. All maps shall be presented at a legible scale

Drainage: The DESCP shall include the following elements:

a. Topography. Topography for offsite areas are required to define the existing upstream tributary areas to the site and downstream to provide enough definition to map the existing storm water flow and flood hazard. Spot elevations shall be required where relatively flat conditions exist.

b. Proposed Grade. Proposed grade contours shall be shown at a scale appropriate for delineation of onsite ephemeral washes, drainage ditches, and tie-ins to the existing topography.

c. Hydrology. Existing and proposed hydrologic calculations for onsite areas and offsite areas that drain to the site; include maps showing the drainage area boundaries and sizes in acres, topography and typical overland flow directions, and show all existing, interim, and proposed drainage infrastructure and their intended direction of flow.

d. Hydraulics. Provide hydraulic calculations to support the selection and sizing of the onsite drainage network, diversion facilities and Best Management Practices (BMPs).

Watercourses and Critical Areas: The DESCP shall show the location of all onsite and nearby watercourses including washes, irrigation and drainage canals, and drainage ditches, and shall indicate the proximity of those features to the construction site. Maps shall identify high hazard flood prone areas.

Clearing and Grading: The plan shall provide a delineation of all areas to be cleared of vegetation and areas to be preserved. The plan shall provide elevations, slopes, locations, and extent of all proposed grading as shown by contours, cross-sections, cut/fill depths or other means. The locations of any disposal areas, fills, or other special features shall also be shown.

Existing and proposed topography tying in proposed contours with existing topography shall be illustrated. The DESCP shall include a statement of the quantities of material excavated at the site, whether such excavations or fill are temporary or permanent, and the amount of such material to be imported or exported or a statement explaining that there would be no clearing and/or grading conducted for each element of the PPEC. Areas of no disturbance shall be properly identified and delineated on the plan maps.

Soil Wind and Water Erosion Control: The plan shall address exposed soil treatments to be used during construction and operation of the PPEC for both road and non-road surfaces including specifically identifying all chemical based dust palliatives, soil bonding, and weighting agents appropriate for use at the PPEC site that would not cause adverse effects to vegetation; BMPs shall include measures designed to prevent wind and water erosion including application of chemical dust palliatives after rough grading to limit water use. All dust palliatives, soil binders, and weighting agents shall be approved by the CPM prior to use.

Project Schedule: The DESCP shall identify on the topographic site map the location of the site-specific BMPs to be employed during each phase of construction (initial grading, PPEC element construction, and final grading/stabilization). Separate BMP implementation schedules shall be provided for each PPEC element for each phase of construction.

Best Management Practices: The DESCP shall show the location, timing, and maintenance schedule of all erosion- and sediment-control BMPs to be used prior to initial grading, during PPEC element excavation and construction, during final grading/stabilization, and after construction. BMPs shall include measures designed to control dust and stabilize construction access roads and entrances. The maintenance schedule shall include post-construction maintenance of treatment-control BMPs applied to disturbed areas following construction.

Erosion Control Drawings: The erosion-control drawings and narrative shall be designed, stamped and sealed by a professional engineer or erosion-control specialist.

Agency Comments: The DESCP shall include copies of recommendations, conditions, and provisions from the County of San Diego, California Department of Fish and Game (CDFG), and San Diego Regional Water Quality Control Board (RWQCB).

Monitoring Plan: Monitoring activities shall include routine measurement of the volume of accumulated sediment in the onsite drainage ditches, and storm water diversions.

Verification: Prior to site mobilization, the Pio Pico Energy Center (PPEC) owner shall obtain the Compliance Project Manager's (CPM's) approval for a site specific DESCP The DESCP shall be consistent with the grading and drainage plan as required by

Condition of Certification **CIVIL-1**, and shall be approved by the chief building official (CBO) and Compliance Project Manager (CPM). In addition, the PPEC project owner shall do all of the following:

- No later than sixty (60) days prior to start of site mobilization, the PPEC project owner shall submit a copy of the DESCP to the County of San Diego and the RWQCB for review and comment. The CBO and CPM shall consider the comments received from the County of San Diego and RWQCB in their approval of the DESCP.
- During construction, the PPEC project owner shall provide a monthly compliance report on the effectiveness of the drainage, erosion, and sediment control measures and the results of monitoring and maintenance activities. Reporting the effectiveness shall include a table listing: (1) each drainage, erosion, and sediment control measure; (2) the monitoring frequency of the drainage, erosion, and sediment control measure; and (3) the maintenance performed, if any, to that measure during the monthly reporting period.
- Once operational, the PPEC project owner shall provide in the annual compliance report information on the results of storm water BMP monitoring and maintenance activities.
- Provide the CPM with two (2) copies each of all monitoring or other reports required for compliance with the County of San Diego, CDFG, and RWQCB.

CONSTRUCTION – STORM WATER POLLUTION PREVENTION PLAN

SOIL&WATER-2: The project owner shall fulfill the requirements contained in State Water Resources Control Board's *National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWG, NPDES No. CAS000002)* and all subsequent revisions and amend ments. The project owner shall develop and implement a construction Storm Water Pollution Prevention Plan (SWPPP) for the construction of the project.

Verification: Thirty (30) days prior to site mobilization, the project owner shall submit the construction SWPPP to the CBO and CPM for approval. A copy of the approved construction SWPPP shall be kept accessible onsite at all times. Within 10 days of its mailing or receipt, the project owner shall submit to the CPM any correspondence between the project owner and the San Diego RWQCB about the general NPDES permit for discharge of storm water associated with construction and land disturbance activities. This information shall include a copy of the notice of intent and the notice of termination submitted by the project owner to the State Water Resources Control Board.

INDUSTRIAL – STORM WATER POLLUTION PREVENTION PLAN

SOIL&WATER-3: The project owner shall comply with the requirements of the State Water Resources Control Board's NPDES General Permit for Discharges of Storm Water Associated with Industrial Activities (Order No. 97-03-DWQ, NPDES No. CAS000001) and all subsequent revisions and amendments. The project owner shall develop and implement a Storm Water Pollution Prevention Plan (SWPPP) for the operation of the site. The project owner

may also submit a Notice of Non- Applicability (NONA) to the RWQCB to apply for an exemption to the general NPDES permit.

Verification: At least thirty (30) days prior to commercial operation, the project owner shall submit copies to the CPM of the operational SWPPP and shall retain a copy on site. Within 10 days of its mailing or receipt, the project owner shall submit to the CPM any correspondence between the project owner and the San Diego RWQCB about the general NPDES permit for discharge of storm water associated with industrial activity. This information shall include a copy of the notice of intent sent by the project owner to the State Water Resources Control Board and the notice of termination. A letter from the RWQCB indicating that there is no requirement for a general NPDES permit for discharges of storm water associated with industrial activity would satisfy this Condition.

STORMWATER MANAGEMENT PLAN & HYDROMODIFICATION PLAN

SOIL&WATER-4: The project owner shall comply with the requirements of the San Diego County Municipal Storm Water Permit (RWQCB Order R9-2007- 0001) and the San Diego County's Watershed Protection, Stormwater Management and Discharge Control Ordinance (Ordinance No. 10096). The project owner shall develop and implement for the operation of PPEC a Stormwater Management Plan (SMP) and a Hydromodification Plan (HMP) in accordance with the requirements of the County's Standard Urban Stormwater Mitigation Plan for Land Development and Public Improvement Projects. The SMP and HMP shall be reviewed by the County and approved by the CPM.

Verification: Sixty (60) days prior to site mobilization, the project owner shall submit to the CPM a copy of the draft SMP and draft HMP for review. Thirty (30) days prior commercial operation, the project owner shall submit to the CPM a copy of the County reviewed SMP and County reviewed HMP, both for CPM approval. A copy of the approved SMP and approved HMP shall be retained on site. The project owner shall submit to the CPM all copies of all correspondence between the project owner and the County regarding storm water management within 10 days of its receipt or submittal.

WATER USE AND REPORTING

SOIL&WATER-5: Water supply for project construction shall be potable water supplied from OWD. Potable water use for construction shall not exceed 28 acre-feet per year. A monthly summary of project construction water use shall be submitted to the CPM.

Water supply for project domestic needs during operation will be potable water from OWD. Water supply for project operation shall be recycled water. If recycled water is not available to the PPEC, potable water supplied by the Otay Water District (OWD) may be used on an interim basis as the water supply for project operation and shall not exceed a total annual maximum of 312 acre-feet per year. An annual summary of project operation water use shall be submitted to the CPM in the annual compliance report.

At such time as recycled water is made available to the PPEC, the project owner shall use recycled water for project operation process needs. The project's use of recycled water shall be tertiary-treated water from OWD and

shall comply with CCR Title 22, Division 4, Chapter 3 and Title 17, Division 1, Chapter 5. Recycled water use shall not exceed a total annual maximum of 314 acre-feet per year. An annual summary of daily water use, differentiating between potable and recycled water, shall be submitted to the CPM in the annual compliance report.

Once recycled water is made available for project operation, potable water may only be used for emergency project operation. For purposes of this condition, the term emergency shall mean the inability for the PPEC to take or for the OWD to deliver recycled water to the PPEC in a quantity sufficient to meet PPEC demand due to natural disaster or other circumstances beyond the control of the project owner and it is necessary for the PPEC to continue to operate to serve a peaking load.

Verification: The project owner shall record PPEC construction water use on a daily basis and shall notify the CPM within 14 days upon forecast to exceed the maximum annual use of 28 acre-feet per year of potable water. Prior to exceeding the maximum use the owner shall provide a plan showing how the owner proposes to modify construction practices or offset excess water use.

The project owner shall record PPEC operation water use (from any source) on a daily basis and shall notify the CPM within 14 days upon forecast to exceed, the maximum annual use of 312 acre-feet per year of potable water or 314 acre-feet per year of recycled water. Prior to exceeding the maximum use the owner shall provide a plan showing how the owner proposes to modify operations.

The project owner shall submit a water use summary report to the CPM in the annual compliance report for the life of the project operation. The annual summary report shall be based on and shall distinguish recorded daily use of potable and recycled water. The report shall include calculated monthly range, monthly average, daily maximum within each month, and annual use by the project in both gallons per minute and acre-feet. After the first year and for subsequent years, this information shall also include the yearly range and yearly average recycled and potable water used by the project.

The project owner shall notify the CPM when potable water will be used for emergency plant operation for more than 32 hours. Within the notification, the project owner shall provide justification for the extended use of potable water as an emergency backup supply and the expected duration of its use. The project owner shall not use potable water as an emergency backup supply for more than 32 hours of plant operation without CPM approval.

PRIOR TO USE OF RECYCLED WATER

SOIL&WATER-6: The project owner shall provide the CPM copies of the executed Recycled Water Purchase Agreement (agreement) with the Otay Water District (OWD) for the long-term supply (20 – 25 years) and delivery of tertiary treated recycled water to the PPEC. The PPEC shall not receive recycled water without the final agreement in place.

The project's use of recycled water shall be tertiary-treated water from OWD and shall comply with California Water Code Section 13523 andCalifornia Code of Regulations Title 22 and Title 17.

Prior to the use of recycled water during the operation of the PPEC, the project owner shall install and maintain metering devices as part of the water supply and distribution system to monitor and record in gallons per day the volume of recycled water used by the PPEC. The metering devices shall be operational for the life of the project, and an annual summary of daily water use shall be submitted to the CPM in the annual compliance report.

Verification: No later than sixty (60) days prior to the connection to the OWD recycled water pipeline, the project owner shall submit a copy of the executed agreement for the long-term supply and delivery of tertiary treated recycled water to the PPEC. The agreement shall specify all terms and costs for the delivery and use of recycled water by the PPEC.

No later than sixty (60) days prior to delivery of recycled water to the PPEC project, the PPEC owner shall submit the Engineering Report and Cross Connection inspection report to the San Diego RWQCB, and California Department of Public Health (CDPH). The PPEC owner shall submit to the CPM a copy of the Engineering Report and Cross Connection inspection report and include all comments from the San Diego RWQCB and CDPH prior to the delivery of recycled water from OWD.

At least thirty (30) days prior to use of recycled water for PPEC operation, the project owner shall submit to the CPM evidence that metering devices have been installed and are operational on the recycled water line serving the project. The project owner shall provide a report on the servicing, testing, and calibration of the metering devices in the annual compliance report.

HYDROSTATIC TEST WATER DISCHARGE

SOIL&WATER-7: Prior to hydrostatic test water discharge to the existing municipal sewer system, the project owner shall fulfill the requirements of the East Otay Mesa Sewer Maintenance District and the City of San Diego Municipal Code 64.0500-64.0520. The Industrial Users Wastewater Discharge Permit from the County of San Diego's Department of Public Works shall clearly specify the discharge limits set by the East Otay Mesa Sewer Maintenance District (EOMSMD) on the wastewater discharge of the project and any other conditions imposed.

Verification: No later than thirty (30) days prior to scheduled hydrostatic test water discharge, the project owner shall submit to the CPM a copy of the approved wastewater discharge permit from the EOMSMD for hydrostatic test water discharge. Written verification from EOMSMD that a permit does not apply and the reasons for exclusion can be used to satisfy this condition.

OPERATION WASTE WATER DISPOSAL AND REPORTING

SOIL&WATER-8: The project owner shall comply with the requirements of the City of San Diego's Municipal Code 64.0500 – 64.0520. The Trucked Industrial

Waste Generator Permit shall clearly specify the discharge limits set by the City of San Diego on the wastewater discharge of the project and any other conditions imposed. During operation, any monitoring reports provided to the City of San Diego shall be provided to the CPM. The CPM shall be notified of any violations of discharge limits or amounts. An annual summary of industrial wastewater discharge shall be submitted to the CPM in the annual compliance report.

Verification: No later than sixty (60) days prior to commercial operation, the project owner shall submit the information and data required to satisfy the City of San Diego's Municipal Code 64.0500 – 64.0520 for a Trucked Industrial Waste Generator Permit to the City of San Diego's Industrial Wastewater Control Program for review and approval, and a copy to the CPM. Written verification from the City of San Diego that a permit does not apply and the reasons for exclusion can be used to satisfy this condition.

During operations, the project owner shall submit any water quality monitoring required by the City of San Diego to the CPM in the annual compliance report. The project owner shall submit any notice of violations from the City of San Diego to the CPM within ten (10) days of receipt and fully explain the corrective actions taken in the annual compliance report.

The project owner shall submit an industrial wastewater discharge summary report to the CPM in the annual compliance report for the life of the project operation. The report shall include the average TDS concentration, monthly range, monthly average, daily maximum within each month, and annual discharge by the project. After the first year and for subsequent years, this information shall also include the yearly range and yearly average discharged by the project.

REFERENCES

Atkins 2011 – Atkins. Otay Water District 2010 Urban Water Management Plan (Adopted June 1, 2011). Prepared for Otay Water District, June 1, 2011.

Aspen 2006 – Aspen Environmental Group. Otay River Watershed Management Plan. Prepared for Otay River Watershed Management Plan, Joint Exercise of Powers Agreement Public Agencies, May 2006.

CSD 2007 – City of San Diego Metropolitan Wastewater Department. Application for Renewal of NPDES CA0107409 and 301(h) Modified Secondary Treatment Requirements. Technical Appendix A: Metro System Facilities and Operations. November 2007 (updated).

OWD 2011 – Otay Water District (tn 62870). Water Supply Assessment Report the Pio Pico Energy Center. July 2011. Approved October 2011. Submitted to CEC/Docket Unit on November 10, 2011.

PBSJ 2010 – PBSJ Corp. Otay Water District Water Resources Master Plan Update, October 2008 (Revised November 2010). Prepared for Otay Water District, November 2010.

PPEC 2011a – Pio Pico Energy Center, LLC / G. Chandler (tn 59646). Application for Certification Volume 1 & 2, dated February 9, 2011. Submitted to CEC/Docket Unit on February 9, 2011.

PPEC 2011d – Pio Pico Energy Center, LLC (tn 60177). Data Adequacy Supplement, dated April 1, 2011. Submitted to CEC/Docket Unit on April 1, 2011.

PPEC 2011h – Pio Pico Energy Center, LLC / M. Foster (tn 61017). Pio Pico Energy Center LLC's AFC Refinement, dated June 8, 2011. Submitted to CEC/Docket Unit on June 8, 2011.

PPEC 2011k – Pio Pico Energy Center, LLC / M. Foster (tn 61384). Applicant's Responses to Commission Staff Data Request Set 1 (#1-59), dated July 15, 2011. Submitted to CEC/Docket Unit on July 15, 2011.

PPEC 2011p – Pio Pico Energy Center, LLC / K. Hellwig (tn 62192). Supplemental Responses to Data Requests Relating to Water Resources, Land Use, Visual Resources and Biological Resources, dated September 13, 2011. Submitted to CEC/Docket Unit on September 13, 2011.

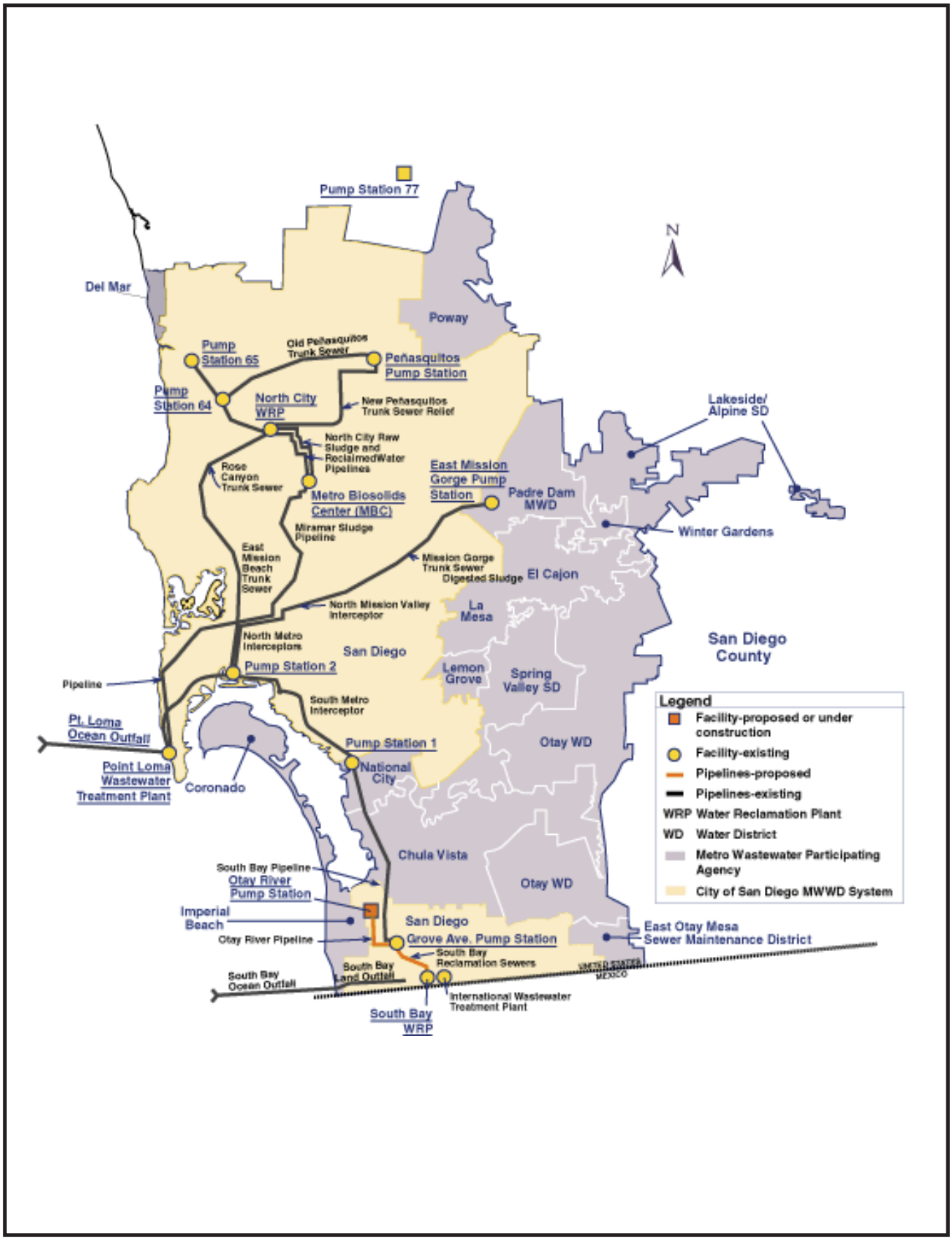
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SDC 2010 – County of San Diego Department of Planning and Land Use. East Otay Mesa Specific Plan Amendment, 2010 Combined Plan (SPA 10-001). Approved September 15, 2010.

SDC 2007 - County of San Diego Department of Planning and Land Use. Low Impact Development Appendices: San Diego Considerations and LID Fact Sheets. December 31, 2007.

SOIL AND WATER - FIGURE 1

Pio Pico Energy Center - San Diego Metro System Key Facilities



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: www.sandiego.gov/mwwd/general/servicearea.shtml

TRAFFIC AND TRANSPORTATION

Andrea Koch

SUMMARY OF CONCLUSIONS

California Energy Commission (Energy Commission) staff has analyzed the traffic-related information provided in the Application for Certification and other sources to determine the potential for the Pio Pico Energy Center (referred to as PPEC, proposed project, or project herein) to have adverse traffic and transportation-related impacts. Staff has also assessed the availability of mitigation measures that could reduce or eliminate the significance of these impacts. Staff concludes that the proposed project would not result in significant adverse direct or indirect traffic or transportation impacts.

As currently proposed, the construction and operation of the PPEC has the potential to cause significant direct and cumulative impacts to ground traffic and aviation. However, staff proposes Conditions of Certification **TRANS-1** through **TRANS-9** to reduce these impacts to less than significant and to ensure that the project would comply with all applicable laws, ordinances, regulations, and standards pertaining to traffic and transportation. Energy Commission staff concludes that with implementation of proposed Conditions of Certification **TRANS-1** through **TRANS-9**, the proposed project would not generate a significant impact under the California Environmental Quality Act guidelines with respect to California Environmental Quality Act Appendix G issues, "Transportation and Traffic."

INTRODUCTION

In compliance with California Environmental Quality Act (CEQA) and Energy Commission requirements, this analysis identifies the PPEC's potential impacts to the surrounding transportation systems and proposed mitigation measures (conditions of certification) that would avoid or lessen these impacts. It also addresses the project's consistency with applicable federal, state, and local transportation-related laws, ordinances, regulations, and standards (LORS).

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Traffic and Transportation Table 1 provides a general description of adopted federal, state, and local LORS pertaining to traffic and transportation that apply to this project.

TRAFFIC AND TRANSPORTATION Table 1
Laws, Ordinances, Regulations, and Standards

Applicable Law	Description
Federal	
Title 49, Code of Federal Regulations, Parts 171-177	Requires proper handling and storage of hazardous materials during transportation.
Title 14, Code of Federal Regulations, Section 77.13 (2)(i)	This regulation requires the project owner to notify the Federal Aviation Administration (FAA) of construction structures with a height

	greater than 200 feet from grade or greater than an imaginary surface extending outward and upward at a slope of 100 to 1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of an airport with at least one runway more than 3,200 feet in length.
State	
California Vehicle Code, Sections 13369, 15275, 15278	Requires licensing of drivers and the classification of license for the operation of particular types of vehicles. A commercial driver's license is required to operate commercial vehicles. An endorsement issued by the Department of Motor Vehicles (DMV) is required to drive any commercial vehicle identified in Section 15278.
California Vehicle Code, Sections 31303-31309	Requires transportation of hazardous materials to be on the state or interstate that offers the shortest overall transit time possible.
California Vehicle Code, Sections 31600-31620	Regulates the transportation of explosive materials.
California Vehicle Code, Sections 32100-32109	Requires shippers of inhalation hazards in bulk packaging to comply with rigorous equipment standards, inspection requirements, and route restrictions.
California Vehicle Code, Sections 34000-34100	Establishes special requirements for vehicles having a cargo tank and for hazardous waste transport vehicles and containers, as defined in Section 25167.4 of the Health and Safety Code.
California Vehicle Code, Section 35550-35551	Provides weight guidelines and restrictions vehicles traveling on freeways and highways.
California Vehicle Code, Section 35780	Requires a single-trip transportation permit to transport oversized or excessive loads over state highways.
California Streets and Highways Code, Sections 660, 670, 672, 1450, 1460, 1470, 1480 et seq., 1850-1852	Requires encroachment permits for projects involving excavation in state and county highways and city streets.
California Health and Safety Code, Section 25160	Addresses the safe transport of hazardous materials.
California Department of Transportation CA MUTCD Part 6 (Traffic Manual)	Provides traffic control guidance and standards for continuity of function (movement of traffic, pedestrians, bicyclists, transit operations), and access to property/utilities when the normal function of a roadway is suspended.
Local	
County of San Diego, General Plan, Mobility Element, Goal M-2 Policy M-2.1	Requires development projects to provide associated road improvements necessary to achieve a level of service of "D" or higher on all Mobility Element roads except for those where a failing level of service has been accepted by the County pursuant to the criteria specifically identified in the accompanying text box (Criteria for Accepting a Road Classification with Level of Service E/F). When development is proposed on roads where a failing level of service has been accepted, feasible mitigation is required in the form of road improvements or a fair share contribution to a road improvement program, consistent with the Mobility Element road network.
City of San Diego Traffic Impact Study Manual	The level of service standard for freeways, roadways, and intersections in the city of San Diego is LOS D. For undeveloped locations, the goal is to achieve an LOS C.
County of San Diego, General Plan, Mobility Element, Goal M-6, (Policies M-6.1)	Requires designated truck routes and minimization of heavy truck traffic (generally more than 33,000 pounds and mostly used for long-haul purposes) near schools and within villages and residential neighborhoods by designating official truck routes, establishing incompatible weight limits on roads unintended for frequent truck traffic, and carefully locating truck-intensive land uses.

San Diego Transportation Impact Fee (TIF) Program/Ordinance	Enables the County to implement Transportation Impact Fee programs. Requires payment of fees that constitute a proposed project's fair share contribution towards the construction costs of the planned transportation facilities that are affected by the proposed development.
City of San Diego Municipal Code, Chapter 8: Traffic and Vehicles, Article 5: Special Regulations	Requires a permit to transport heavy and oversize loads.
County of San Diego East Otay Mesa Business Park Specific Plan, Appendix 5, A-5.12: Facility Phasing, Financing and Implementation	Requires public facility improvements for East Otay Mesa to be "financed through the equitable participation of all affected property owners and developers". The six categories of public facility improvements include: On-site Roads and Infrastructure, On-site Capital Facilities, On-Site Operation and Maintenance, Off-site Roads, Off-Site Capital Facilities and Public Transit Service.

SETTING

The proposed 9.99-acre PPEC site is located in an unincorporated area of San Diego County known as Otay Mesa. The proposed project site parcel is located in the southeast quadrant of the Alta Road and Calzada de la Fuente intersection. The site comprises the entire parcel with Assessor's Parcel Number (APN 648-040-45), and the proposed 6-acre laydown area is located on the adjacent parcel to the south (APN 648-040-46).

CRITICAL ROADS AND FREEWAYS

The transportation network within the project area consists primarily of city arterials, collectors, local roadways, and state-maintained freeways. The following describes the main regional and local roadways that would be used for construction and operational traffic accessing the proposed project site. **Traffic and Transportation Figure 1** show the regional transportation setting, and **Traffic and Transportation Figure 2** shows the local transportation setting.

Existing Regional and Local Transportation Facilities

State Route 125

State Route (SR) 125 is a four-lane expressway toll road between SR-905 in Otay Mesa near the U.S.-Mexico border and SR-54 near the City of Chula Vista. Current Average Annual Daily Traffic (AADT) is 30,000 vehicles per day to the north of State Route 905 (PPEC 2011a, AFC pg.5.11-5). Future alignment plans in development are a connecting interchange between SR-905 and future SR-11, as well as an interchange at Lonestar Road. These improvements would be accomplished with the coordination and cooperation of the cities and jurisdictions along the proposed route.

State Route 905

State Route (SR) 905 is an east-west six-lane expressway which extends from Interstate 5 and Interstate 805 in the San Ysidro community (located in the southern section of San Diego) to the U.S.-Mexico border at Otay Mesa. Approximately one mile east of Interstate 805, SR-905 becomes Otay Mesa Road. SR-905/Otay Mesa Road at

La Media Road is a six-lane Prime Arterial until Piper Ranch Road. East of Piper Ranch Road, SR-905 provides two (2) eastbound lanes and three (3) westbound lanes, until it intersects with SR-125 and becomes four (4) eastbound lanes and three (3) westbound lanes. Shortly after SR-905 intersects SR-125, SR-905 goes south and Otay Mesa Road continues east. At this intersection, SR-905 turns into Otay Mesa Road. Current AADT is 36,000 vehicles per day to the west of State Route 125 (PPEC 2011a, AFC pg. 5.11-6).

Future Border Crossing and State Route 11

State Route (SR) 11 is a planned freeway/toll facility which would extend easterly of SR-905 and connect with a future border crossing east of Alta Road. It is scheduled to open in 2015. The extension would revise the SR-905/125 interchange and provide two new interchanges at Enrico Fermi Drive and Seimpre Viva Road. The SR-11/Otay Mesa East Port of Entry Environmental Impact Report /Statement was released by Caltrans in November 2010. Development of SR-11 was included in the SANDAG 2030 Revenue Constrained Transportation Plan and the 2008 Regional Transportation Improvement Program. Conceptually, SR-11 has been included in the East Otay Mesa Specific Plan, and the City and County of San Diego general plans.

Otay Mesa Road

Otay Mesa Road is an east-west roadway that traverses both City of San Diego and County of San Diego jurisdictions, and links Alta Road to regional transportation facilities with entrance and exit routes to State Route 125. At the intersection where SR-905 goes south and Otay Mesa Road continues east, Otay Mesa is a two-lane roadway until it intersects with Alta Road, approximately 1.5 miles east. Current AADT is 14,000 vehicles per day to the east of State Route 125 (PPEC 2011a, AFC pg. 5.11-6).

Alta Road

Alta Road is a north-south county roadway and the primary access road to the PPEC project site. Alta Road is a two (2) lane undivided road with the capacity of a Light Collector. The roadway segments between Alta Road and Paseo De La Fuente and Calzada De La Fuente has been widened to provide two (2) northbound travel lands and one (1) southbound travel lane. This segment capacity is considered a Town Collector. Current AADT is 5,700 vehicles per day to the north of Otay Mesa Road (PPEC 2011a, AFC pg. 5.11-6).

Level of Service

To quantify the existing baseline traffic conditions, the study area state highways, roadways, and intersections were analyzed in the AFC to determine their operating conditions. Based on the traffic volumes, the turning movement counts, and the existing number of lanes at each intersection, the volume/capacity (V/C) ratios and levels of service (LOS) have been determined for each intersection.

LOS is a qualitative measure describing operational conditions within a traffic stream. It is used to describe and quantify the congestion level on a particular roadway or

intersection and generally describes these conditions in terms of such factors as speed or vehicle movement. **Traffic and Transportation Table 2** summarizes roadway LOS for associated V/C ratios.

Traffic and Transportation Table 2
Level of Service Criteria for Roadways and Intersections

Level of Service	Volume/Capacity	Description
A	<10	Free flow; insignificant delays
B	>10 and <15	Stable operation; minimal delays
C	>15 and <25	Stable operation; acceptable delays
D	>25 and <35	Approaching unstable flow; queues develop rapidly but no excessive delays
E	>35 and <50	Unstable operation; significant delays
F	>50	Forced flow; jammed conditions

Current Roadway Segment Conditions — LOS

Level of service standards for the roadways and intersections in the vicinity of the PPEC are established by and under the jurisdiction of two different agencies: the County of San Diego and City of San Diego. Staff used these LOS standards to evaluate potential PPEC-generated traffic impacts. The following is a list of the applicable LOS standards:

- County of San Diego General Plan Mobility Element

  Policy M-2.1 states that development projects are required to provide associated road improvements necessary to achieve a level of service of "D" or higher on all Mobility Element roads[1], except for those where a failing level of service has been accepted by the County (pursuant to the Criteria for Accepting a Road Classification with Level of Service E/F).

- City of San Diego Traffic Impact Study Manual

  The level of service standard for freeways, roadways, and intersections in the city of San Diego is **LOS D**. For undeveloped locations, the goal is to achieve an **LOS C**.

OTHER TRANSPORTATION SYSTEMS

Freight and Passenger Rail

There are currently no freight rail lines in the vicinity of the project. The nearest railway is the US-Mexico line that connects San Diego with the Imperial Valley via Mexico. The Metropolitan Transit System (MTS) Trolley System's Green and Orange Lines currently do not serve or reach the East Otay Mesa Area. Transportation Goal C-9 of the East

[1] According to page 4-6 of the County of San Diego General Plan Mobility Element: "The backbone of the County's road network is referred to as the Mobility Element network, which includes both state highways and county roads. However, the goals and policies for roadways apply to all roads, public and private, unless otherwise stated".

Otay Mesa Specific Plan is to encourage the use of rail and coordination with Caltrans, SANDAG, the City of San Diego and County of San Diego.

Bus Service

The Metropolitan Transit System operates only one bus route within the East Otay Mesa area. MTS Route 905 does not directly serve the project site. The route originates from the Iris Avenue Trolley Station, with stops at Otay Mesa Road and Heritage Road, Airway Road and Brittannia Boulevard, Siempre Viva Road and Drucker Land, and at its final destination, the Otay Mesa Border Crossing (see **Traffic and Transportation Figure 2)**.

Bicycle and Pedestrian Facilities

The County of San Diego General Plan Mobility Element states: "With the exception of State-maintained highways and roads, the County is responsible for the maintenance of the public (Mobility Element and Local Public) road network in the unincorporated areas, including associated bicycle and pedestrian facilities. In addition, the East Otay Mesa Specific Plan Amendment Circulation Element defines the bicycle routes within the specific planning area and states that, "the use of bicycles as a commuting mode of transportation is encouraged as a means to minimize congestion and greenhouse gas emissions". The bicycle network, which is located within the vicinity of the PPEC, is composed of Class II facilities (bike lanes). Bicyclists are permitted to travel on all public roadways within the Specific Plan.

Airports

Two existing airports are currently operating in the vicinity of the PPEC project site. These airports are Brown Field Municipal Airport, located approximately three miles due west, and Tijuana's Rodriquez International Airport, located in Mexico approximately three miles southwest of the PPEC project site. Rodriquez International Airport activities remain south of the California/Mexico border (Brown Field Municipal Airport [Brown Field] 2011b) and therefore do not need to be analyzed for this project.

Brown Field Municipal Airport is owned and operated by the City of San Diego and is a general aviation airport. It is frequently used by the military and law enforcement agencies; the U.S. Department of Homeland Security, U.S. Customs, San Diego County Fire Department, and Border Protection have aircraft (planes and helicopters) within the project area. Brown Field has two runways: Runway 8L/26R, 7,920 feet long and 150 feet wide with a pattern altitude of 1,000 feet above ground level (AGL); and Runway 8R/26L, 3,180 feet long and 75 feet wide with a pattern altitude of 600 feet AGL (SDCALUC 2010). In 2011, local general aviation made up 55% of operations while 39% involved transient general aviation (AirNav 2011).

Due to prevailing winds in the area, most aircraft take-off heading west from Brown Field and do not traverse the PPEC site. Most aircraft approaching Brown Field would not overfly the PPEC site either, as depicted in Traffic and Transportation Figure 2. Approximately 75% of aircraft approaching Brown Field enter the traffic pattern from the

north and west of Donovan State Prison. See the following for a summary of possible approaches as shown in Traffic and Transportation Figure 2:

Instrument Approach:
The two instrument approaches (blue lines/arrows) guide aircraft from the west and north and do not pass near the proposed PPEC location; this includes the two missed approaches (dashed blue arrows) which direct aircraft away from the project site.

Visual Approach:
See the following for a summary of visual approaches that do not traverse the proposed PPEC site:

- Some aircraft on a visual approach from the west (red arrows) can, depending on wind conditions, fly a straight-in approach, landing on Runway 8R or 8L. However, most aircraft from the west traverse the downwind leg (in an easterly direction north of the runways), turning right to enter the traffic pattern and land on Runway 26L or 26R.
- Aircraft on a visual approach (red arrows) from the north enter the traffic pattern west of the Donovan State Prison to land on Runway 26L or 26R.
- Most aircraft on a visual approach (red arrows) from the south traverse the downwind leg (in an easterly direction south of the runways), turning left to land on Runway 26L or 26R.

However, aircraft approaching Brown Field from the east, though much fewer in number than those using other visual approaches, may fly over the PPEC site at altitudes below 2,500 feet AGL (Brown Field Municipal Airport 2011a). Generally, though, the San Ysidro Mountains east of Brown Field, which rise an estimated 3,000 feet above the airport's elevation, discourage low altitude flight from the east in the vicinity of the PPEC site.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHODS AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

Significance criteria used in this document for evaluating environmental impacts are based on the CEQA Guidelines, the CEQA Environmental Checklist for Transportation/Traffic, and applicable LORS used by other governmental agencies. Specifically, staff analyzed whether the proposed project would result in the following:

1. Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections);

2. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all

modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;

3. Conflict with an applicable congestion management program, including, but not limited to, level of service standards (LOS) and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways;

4. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);

5. Result in inadequate emergency access;

6. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities;

7. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risk;

8. Produce a thermal plume in an area where flight paths are expected to occur below 1,000 feet from the ground[2]; or

9. Have individual environmental effects which, when considered with other impacts from the same project or in conjunction with impacts from other closely related past, present, and reasonably foreseeable future projects, are considerable, compound, or increase other environmental impacts.

DIRECT/INDIRECT IMPACTS AND MITIGATION

The direct and indirect impacts of the proposed PPEC on traffic and transportation system are discussed in this section and based on an analysis comparing pre-PPEC and post-PPEC conditions. Staff evaluated the PPEC's impacts for two separate future scenarios: the peak construction period (when construction activity and employment would be maximized) and the first year of full operation. The below roadway segments were selected for evaluation because they provide the most direct route to the project site and would most likely be affected by project traffic during project construction and operation.

Construction Impacts and Mitigation

Analysis of the PPEC Construction impacts focuses on the peak construction period which would generate the most vehicle trips and result in the worst-case scenario for

[2] The FAA recommends that pilots avoid overflight of plume-generating industrial sites below 1,000 feet AGL (FAA 2006).

traffic impacts. The peak construction period is expected to last from Month 6 through Month 10 of project construction.

Construction Workforce Traffic

A large regional workforce would commute daily from locations relatively near the project site and would supply the majority of construction labor. To travel to the project site, construction traffic would use I-805, SR-905, SR-125, Otay Mesa Road and Alta Road. The following is a breakdown of the approximate percentage of construction trips by route:

- 20% of the project trips would use a route from the north or northwest via SR-125 north of Otay Mesa Road (SR-905), east on Otay Mesa Road, north on Alta Road, and then east to the project site; and
- 80% of the project trips would use a route from the west via SR-905, east on Otay Mesa Road, north on Alta Road, and then east to the project site (PPEC 2011a, AFC pg. 5.11-3).

Truck Traffic

Construction equipment deliveries and construction-related truck traffic would contribute additional trips during the construction period. Equipment deliveries and construction truck traffic were estimated using a passenger car equivalent (PCE) factor of three cars per truck. Using this conversion, peak construction of the PPEC would generate approximately 90 daily one-way truck trips, including 54 peak hour one-way truck trips. Of these 54 peak hour trips, 30 trips would occur during the morning peak hour and 24 trips would occur during the evening peak hour.

Oversized or overweight trucks with unlicensed drivers could present significant hazards to the general public and/or damage roadways. To ensure that trucks comply with weight, size, and route limitations set by the City and County of San Diego and Caltrans, and that drivers are properly licensed, staff has included Condition of Certification **TRANS-1** to require the project owner to obtain roadway permits for vehicle sizes and weights, driver licensing, and truck routes. However, even properly sized and licensed trucks could damage roadways, creating significant public hazards; for this reason, staff has recommended Condition of Certification **TRANS-2**, which requires that the project owner repair and restore all roads damaged during construction activities.

Total Construction Traffic

The PPEC construction period is proposed to begin in 2013 with a 16-month construction schedule. The estimated completion of construction is 2014. The average construction workforce would be approximately 150 workers over the 16-month time period, with a maximum of approximately 284 workers during peak construction (PPEC 2011a, AFC pg. 3-45).

The total workforce and truck trips generated during peak construction would be 658 daily one-way trips (568 worker trips added to 42 equipment delivery trips and 48

construction truck trips). Approximately 622 of these one-way trips would occur during peak hours: 314 during the morning peak and 308 during the evening peak (PPEC 2011a, AFC pg. 5.11- 17). **Traffic and Transportation Table 3,** summarizes all peak construction traffic generated by the PPEC.

Traffic and Transportation Table 3
One-Way Trips Generated by Peak Construction

Vehicle Type	Daily Trips	AM Peak Hour[3] Trips		PM Peak Hour[4] Trips	
		In	Out	In	Out
Peak Construction Workers[1]	568	284	0	0	284
Equipment Deliveries[2]	42	9	9	0	12
Construction Trucks[5,6]	48	12	0	0	12
Total	658	305	9	0	308

[1] Worker traffic during the 3-month peak construction period. These figures assume the worst case traffic scenario of one worker per car.

[2] Equipment movement during the 3-month peak construction period.

[3] The AM peak hour is 7:00 a.m.-9:00 a.m.

[4] The PM peak hour is 4:00 p.m.-6:00 p.m.

[5] Construction truck traffic during the 3-month peak construction period.

[6] Three passenger cars equivalent (PCE) per truck

Staff analyzed the proposed PPEC's potential traffic impacts by evaluating state route segments, roadway segments, and intersections in the vicinity of the project site. Staff compared existing traffic volumes and levels-of-service (LOS) to traffic volumes and LOS projected after addition of PPEC construction workforce and truck traffic.

For affected state route segments, **Traffic and Transportation Tables 4 and 5** summarize existing and peak construction morning and evening peak hour traffic volumes and LOS. As shown in these tables, during peak construction of the PPEC, peak hour LOS on affected state route segments would operate at the LOS D standard or better. Therefore, construction of the PPEC would not result in significant impacts to state route LOS.

Traffic and Transportation Table 4
State Routes: AM Peak Hour Trips and LOS during Peak Construction

State Route Segment	Peak Hour Volume and LOS			LOS Standard	Existing LOS	LOS Peak Construction
	Existing (Year 2011)	**PPEC Added Trips**	**Peak Construction**			
SR-125 (North of SR-905)	**2,400**	63[1]	**2463**	**LOS D**	**LOS A**	**LOS A**
SR-905 (Otay Mesa Road)	**5,600**	251 [1]	**5851**	**LOS D**	**LOS B**	**LOS C**

[1]These numbers are based on trip distribution splits for construction, which are approximately 20% to and from the north on SR-125, and approximately 80% to and from the west on Otay Mesa Road (SR-905).

Traffic and Transportation Table 5
State Routes: PM Peak Hour Trips and LOS during Peak Construction

State Route Segment	Peak Hour Volume and LOS			LOS Standard	Existing LOS	LOS Peak Construction
	Existing (Year 2011)	**PPEC Added Trips**	**Peak Construction**			
SR-125 (North of SR-905)	**2,400**	62[1]	**2462**	**LOS D**	**LOS A**	**LOS A**
SR-905 (Otay Mesa Road)	**5,600**	246[1]	**5846**	**LOS D**	**LOS B**	**LOS C**

[1]These numbers are based on trip distribution splits for construction, which are approximately 20% to and from the north on SR-125, and approximately 80% to and from the west on Otay Mesa Road (SR-905).

For affected local road segments, **Traffic and Transportation Table 6** summarizes existing 2011 peak hour traffic volumes and LOS and peak construction peak hour traffic volumes and LOS. As shown in this table, during construction of the PPEC, all affected local roadway segments would meet the LOS D standard. Therefore, construction of the PPEC would not result in significant impacts to local roadways.

Traffic and Transportation Table 6
Roadways: Traffic Volumes and LOS during Peak Construction

Roadways	Boundaries of Segment	Existing Peak Traffic Volume and LOS (Year 2011)	Peak Construction Volume and LOS AM	Peak Construction Volume and LOS PM	LOS Standard
Otay Mesa Road	SR-905 and Sanyo Avenue	1200 LOS A	1587 LOS D	1517 LOS D	LOS D
Otay Mesa Road	Sanyo Avenue and Enrico Fermi Drive	900 LOS D	1151 LOS D	1074 LOS D	LOS D
Otay Mesa Road	Enrico Fermi Drive and Alta Road	950 LOS C	1001 LOS C	83[1] LOS B 765[2] LOS C	LOS D
Alta Road	Otay Mesa Road and Paseo De La Puente	700 LOS C	1001 LOS C	83[1] LOS B 765[2] LOS C	LOS D

[1] Eastbound
[2] Westbound

Traffic and Transportation Table 7 compares existing and peak construction delay and LOS at study intersections during the morning and evening peak hours. LOS would increase on SR-125 Northbound On Ramp/SR-905, SR-905/Otay Mesa Road, Sanyo Avenue/Otay Mesa Road, Enrico Fermi Drive/Otay Mesa Road, Alta Road/Paseo De La Puente, and Alta Road/North Access Road. LOS would remain generally the same for La Media Road/SR-905, SR-125 Southbound Off Ramp/SR-905 and Alta Road/Otay Mesa Road. The LOS standard for all intersections is LOS D. All intersections would operate at or above the LOS standard during peak construction peak hours; therefore, construction of the PPEC would not significantly impact any of the study intersections.

Traffic and Transportation Table 7
Peak Hour Delay and LOS on Study Intersections during Peak Construction

Study Intersection	Year 2011				Peak Construction				LOS Standard
	AM Peak		PM Peak		AM Peak		PM Peak		
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	
La Media Road/SR-905	20.3	C	27.0	C	21.4	C	30.9	C	LOS D
SR-125 SB Off Ramp/SR-905	18.3	B	6.9	A	19.4	B	6.8	A	LOS D
SR-125 NB On Ramp/SR-905	2.0	A	8.0	A	2.0	A	12.1	B	LOS D
SR-905 /Otay Mesa Road	20.0	C	24.5	C	22.0	C	38.4	D	LOS D
Sanyo Avenue /Otay Mesa Road	3.2	A	15.5	B	3.2	A	22.5	C	LOS D
Enrico Fermi Drive/Otay Mesa Road	9.4	A	12.5	B	15.1	B	14.5	B	LOS D
Alta Road/Otay Mesa Road	0.0	A	0.0	A	0.0	A	0.0	A	LOS D
Alta Road/ Paseo De La Puente	1.5	A	1.2	A	6.2	A	25.3	C	LOS D
Alta Road/North Access Road	15.4	C	14.8	B	17.3	C	16.1	C	LOS D

Linear Facilities

The proposed PPEC includes construction of a natural gas pipeline. There are two proposed routes for the gas supply pipeline. Route A would extend 7,775 feet south along Alta Road and Otay Mesa Road, near the Mexico border, where it would connect to the existing San Diego Gas and Electric (SDG&E) natural gas pipeline. Route B would extend approximately 2,375 feet south along Alta Road, turn west on Otay Mesa Road, and continue approximately 7,920 feet to Harvest Road at which point it would connect to the existing SDG&E natural gas pipeline.

Because pipeline construction would require open cutting the roadway along proposed Route A or Route B, Energy Commission staff is proposing Condition of Certification **TRANS-2,** which requires the project owner to restore the roadway to its original condition immediately following construction. Pipeline construction could cause significant traffic impacts with potential temporary road closures and traffic congestion on Alta Road, Otay Mesa Road (Route A) and Harvest Road (Route B). To mitigate these potential traffic impacts, Condition of Certification **TRANS-3** is included to require: a traffic control plan, a heavy hauling plan, and a parking/staging plan. Although Calzada de la Fuente is a dead-end roadway, a traffic control plan would be required. Staff is also proposing Condition of Certification **TRANS-4** to require the project owner to obtain all the necessary encroachment permits for construction within public rights-of-way.

Other linear facilities that would be a part of the proposed PPEC include:

- A short connection to an existing sewer main along Calzada de la Fuente along the north project site boundary or to an existing sewer main along Alta Road along the west side of the project;
- Connection of a storm water pipeline located along Calzada de la Fuente, adjacent to the project site, to a detention pond located at the northwest corner of the project site;
- A short connection to potable service either to an existing main along Calzada de la Fuente or to an existing water supply pipeline.

Two alternative transmission routes are proposed to connect the project to the existing Otay Mesa 230kV switchyard located approximately 2,000 feet east of the proposed project site. Route A is proposed to begin as an overhead power line on the north edge of the project site proceeding in an easterly direction along Calzada de la Fuente. It would extend overhead for approximately 1,700 feet to the east, then be routed underground for approximately 400 feet to the switchyard connection. Route B would begin as an overhead power line from the eastern edge of the project site, run south approximately 550 feet, turn east for approximately 1,400 feet and turn north for the final 700 feet to connect with the existing switchyard. Table 5.13-4 in the AFC lists 5 above-ground transmission line steel poles.

Condition of Certification **TRANS-2** would mitigate the potential impacts from the construction within the public right-of-way of the sewer main, storm water pipeline, and Route A or Route B transmission line. Condition of Certification **TRANS-4** would require the project owner to obtain all necessary encroachment permits for the respective construction within public rights-of-way.

Construction Workforce Parking and Laydown Area

PPEC construction would require vehicle parking and laydown areas for materials delivery and storage. The proposed temporary laydown and parking area would be 6.0 acres on an adjacent parcel that is contiguous to the project site. Primary access to the construction and laydown area access would be from Alta Road or Paseo de la Fuente. The 6.0-acre temporary laydown area would provide vehicle parking, office trailers and small fabrication areas to accommodate project construction.

On average, for every parked vehicle, a parking lot must have 350 square feet of space, which includes both the actual parking space and room for circulation. During peak construction, approximately 284 construction workers would drive and need parking on-site. Using the standard of 350 square feet of space needed for every parking space, approximately 2.28 acres would be needed to provide a parking space for every construction worker vehicle. The proposed lay-down area is 6.0 acres; therefore, there would be sufficient room remaining for truck deliveries, material storage, office trailers and small fabrication areas to accommodate project construction.

Transportation of Hazardous Materials and Waste

During construction, no acutely hazardous materials would be used or stored onsite. The low-level hazardous materials planned for use during construction include gasoline, diesel fuel, oil, lubricants, cleaners, solvents, adhesives, and paint materials. Transportation of these materials would pose less than significant hazards to the public.

Enhanced Water Treatment System

On October 27, 2011, the project applicant submitted a modification to the wastewater treatment and disposal method described in the AFC. The proposed modification includes: expansion of the water treatment building by approximately 9,200 feet; addition of a 20,000-gallon wastewater storage tank; and disposal of project operation wastewater approximately 21 miles from the project site at the City of San Diego Pump Station 1.

The enhanced water treatment system would not cause significant impacts to traffic or transportation during its construction. Construction of the system would take place during Months 4-6 of the general project construction period and would not coincide with peak project construction, which is expected to take place from Months 6-10. Construction of the enhanced water treatment system would not generate new construction trips beyond the peak construction trips already proposed in the AFC and analyzed in this document as having less than significant impacts to traffic level of service.

Aviation Impacts

Staff has been advised by the applicant that the cranes that would be used during construction are approximately 200 feet tall. This requires the applicant to notify the Federal Aviation Administration of construction pursuant to Title 14, Part 77 of the Code of Federal Regulations. These regulations require FAA notification for any proposed structure over 200 feet in height above ground level (AGL), regardless of the distance from an airport.

Brown Field Municipal Airport is approximately 3 miles west of the project site and has two runways, one of which is 7,972 feet long. Title 14, Part 77 of the Code of Federal Regulations also requires FAA notification for any proposed construction feature that would be taller than an imaginary surface extending outward and upward at a slope of 100 to 1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of an airport with at least one runway more than 3,200 feet in length. Based on this regulation, staff calculated that at the proposed PPEC site, this imaginary surface threshold is at 158 feet AGL (three miles multiplied by 5,280 feet and divided by 100). The 200-foot tall construction cranes would penetrate this surface; therefore, FAA Notification would also be required based on this regulation.

For project compliance with these FAA regulations, staff is proposing Condition of Certification **TRANS-7**, which would require the project owner to submit a Form 7460-1

"Notice of Proposed Construction or Alteration" regarding the construction crane to the FAA.

PPEC Construction Impacts Conclusion

With implementation of the conditions of certification discussed in this analysis, construction of the PPEC would result in less than significant impacts to the traffic and transportation system in the vicinity of the project.

Operational Impacts and Mitigation

Workforce Traffic

If approved, the PPEC is expected to begin commercial operation in May 2014 and employ 12 full-time staff members. The facility would be staffed by four operators, four maintenance technicians, an environmental technician, one administrative staff member, one operations supervisor, and a plant manager (PPEC 2011a, AFC pg. 5.10-9). The plant would be operated and staffed 24 hours a day, seven days a week (PPEC 2011a, AFC pg. 3-45). Trip distribution for operations would be as follows: approximately 20% from/to the north of SR-125, north of Otay Mesa Road (SR-905) and approximately 80% will be orientated to and from the west on Otay Mesa Road (SR-905), west of SR-125.

Permanent employees would commute as much as one hour from locations within San Diego County. The operation employees would generate a maximum of 12 new vehicles trips during the morning peak hours and 12 new vehicle trips during the evening peak hours. The total increase in daily one-way vehicle trips, 24, is a minimal increase in traffic and would have a less than significant impact on overall traffic counts, congestion, and LOS along any of the state highways, roadways, and intersections workers would use to access the project site.

Truck Traffic and Hazardous Materials Delivery

Operation of the PPEC would generate wastes resulting from processes, routine facility maintenance, and office activities typical of natural gas-fueled power generation. These wastes may include empty hazardous materials containers, used lube oil, spent batteries, waste oil, waste paint, thinners and solvents and oily rags/absorbents. These materials would be hauled away towards waste recycling and disposal facilities via southbound Alta Road, westbound Otay Mesa Road, and northbound SR-125 or westbound SR-905. Transportation of these process-generated wastes would not pose significant hazards to the public, as these wastes are not acutely hazardous.

During project operation, aqueous ammonia, a regulated substance, would be delivered to the PPEC facility approximately once every 7.5 days and transported in accordance with Vehicle Code Section 32100.5, which addresses the transportation of hazardous materials that pose an inhalation hazard (PPEC 2011a, AFC pg. 5.11-16). The project owner's proposed routes for hazardous material deliveries are generally the same as for regular truck deliveries. The routes used would primarily be I-805, SR-905, Otay Mesa

Road and Alta Road. These routes are not located near any sensitive receptor locations, such as schools, daycare facilities, or large residential areas.

However, delivery of aqueous ammonia could still be hazardous to the public if a spill were to occur. Therefore, staff recommends Condition of Certification **TRANS-5** to ensure that the project owner contracts with licensed hazardous materials and waste hauler companies that comply with all applicable regulations and obtain the proper permits and/or licenses from Caltrans and the County of San Diego.

For more information on hazardous materials used during project operation and applicable regulations, see the **HAZARDOUS MATERIALS MANAGEMENT** section of this Staff Assessment.

Enhanced Water Treatment System

During PPEC operation, the Enhanced Water Treatment (EWT) System would require a tanker truck to transport wastewater approximately 21 miles to the City of San Diego's industrial wastewater disposal facility, referred to as Pump Station Number 1. From the project site, the tanker truck would use State Route 125 (SR-125), State Route 54 (SR-54) and Interstate 5 (I-5). This truck route is the most efficient route with the least amount of surface street and traffic signal interruption.

Staff analyzed PPEC operation impacts to roadway and intersection levels of service with the addition of the tanker truck trips. During a normal PPEC operation day, three daily truck roundtrips for transporting wastewater would be necessary. In the unlikely event that the PPEC were to operate 24 hours a day on an extremely hot day, a maximum of seven daily truck roundtrips would be required. Seven daily truck roundtrips translates to 21 daily passenger car equivalent (PCE) roundtrips and 42 daily PCE one-way trips. With the addition of these trips, all of the previously analyzed roadways would continue to operate at LOS D or better, and all of the previously analyzed intersections would continue to operate at LOS C or better. Therefore, the EWT system would not significantly impact LOS on these previously analyzed roadways and intersections.

However, State Route 54 and Interstate 5 were not previously analyzed for PPEC operation impacts on level of service. State Route 54 is a 6-lane expressway, and the segment analyzed in this section is between SR-125 and I-5. Current Average Annual Daily Traffic (AADT) on this segment is 126,000 vehicles per day, and it currently operates at LOS F. Interstate 5 provides five mainline lanes in each direction, and the segment analyzed in this section is just north of SR-54. Current AADT on this segment is 178,000 vehicles, and it currently operates at LOS E.

Under Year 2014 project operation conditions, including the tanker truck trips, SR-54 and I-5 would continue to operate at poor levels of service, LOS F and E, respectively. However, the EWT system would have less than significant impacts to LOS because SR-54 and I-5 are already operating at LOS F and E, and the EWT system would only add an additional 42 daily PCE trips, which is less than 0.1% of pre-operational baseline traffic.

For traffic calculations, see the AFC Refinement for the Enhanced Water Treatment System (PPEC 2011s).

Parking

As indicated earlier, the PPEC would employ a total of 12 operations staff. The facility would be staffed by four operators, four maintenance technicians, an environmental technician, one administrative staff member, one operations supervisor, and a plant manager. The plant would be operated and staffed 24 hours a day, seven days a week.

As shown in Figure 3.1-3 of the AFC, the PPEC applicant proposes seven spaces and one handicap space. Staff calculated that the PPEC project would actually require a minimum of twelve spaces for operations staff. The parking as proposed would not meet the minimum requirements; therefore, staff proposes **LAND-1** to make the project consistent with this standard. See page 13 of the **LAND USE** section of this Staff Assessment for more details.

Emergency Access

Staff believes that both regional and local emergency access to the PPEC site is adequate. Regionally, emergency vehicles could access the site using the most direct route from SR-905, SR-125, I-805, Otay Mesa Road and Alta Road. A secondary emergency access would be located on Alta Road before the intersection of Calzada De La Fuente.

Several county roads built to county standards provide access to the project site. To further ensure adequate emergency access, staff has included in Condition of Certification **TRANS-3** a requirement that the Traffic Control Plan demonstrates and ensure sufficient access. On-site circulation of emergency vehicles would be subject to site plan review by the San Diego County Fire Department per conditions of certification in the **WORKER SAFETY AND FIRE PROTECTION** section of this Staff Assessment.

Airport Operations and Hazards

Structure Height and Navigable Airspace

Tall structures could pose obstruction hazards to aircraft, especially with the Brown Field Municipal Airport located approximately 3 miles west of the PPEC site. As discussed earlier, an object at the PPEC site would need to be at least 158 feet tall to penetrate navigable airspace and require the applicant to file a Notice of Construction or Alteration with the FAA. (See the **Aviation Impacts** section for more information.) The

tallest structures at the PPEC site would be three 100-foot tall exhaust stacks. These stacks would be shorter than the 158-foot height threshold, meaning that they would not penetrate navigable airspace and require notification of the FAA.

Staff also found that the proposed PPEC is located outside of the Brown Field Airport's Area of Influence, meaning that the project is not subject to policies in the Brown Field Municipal Airport Land Use Compatibility Plan. Staff also analyzed the Brown Field Municipal Airport Master Plan Update and found that the PPEC project site is located outside of the protected air space contour (horizontal and vertical) minimums required by the Federal Aviation Administration.

Thermal Plumes

The proposed PPEC would emit high velocity thermal plumes from three 100-foot tall exhaust stacks during operation. High velocity thermal plumes can pose a threat to aviation safety. The FAA has formally acknowledged plume hazards by amending the Aeronautical Information Publication to establish thermal plumes as flight hazards and recommend that pilots avoid overflight below 1,000 feet AGL and fly upwind of facilities producing thermal plumes. Aircraft flying through plumes may experience significant air disturbances, such as turbulence and vertical shear.

In the vicinity of the PPEC, there is potential for aircraft to overfly the project's thermal plumes. As discussed earlier in the **Airports** section, aircraft approaching Brown Field from the east may traverse the project site at altitudes below 2,500 feet (Brown Field 2011a). Helicopters fly near the site approximately 85 times a month, some at altitudes as low as 300 feet AGL (Customs and Border Protection 2011)[3]. Staff also witnessed Pacific Coast Skydiving (PCS) using the open lot directly south of the PPEC site as a jump site. Andy Rowell, the owner, stated that PCS performs approximately 80-100 jumps a week, but that the jump site would be moved upon completion of the PPEC (Pacific Coast Skydiving 2011). The jump site is located within a 10 mile area that is noticed on the San Diego Sectional Chart asking pilots to use "CAUTION: Intensive Parachute Activity, Monitor 121.95 within 10 NM Radius".

Energy Commission staff uses a 4.3 meters per second (m/s) vertical velocity threshold[4] for determining whether a plume may pose a hazard to aircraft. This velocity generally defines the point at which general aviation aircraft begin to experience more than light turbulence. Exhaust plumes with high vertical velocities may damage aircraft airframes or cause turbulence resulting in loss of aircraft control and maneuverability (FAA 2006).

[3] Staff has been advised by a Department of Homeland Security representative that thermal plumes from the proposed project would not impact their operations (Department of Homeland Security 2011

[4] This is based on staff's review of a 2004 safety circular (AC 139-05(0)), prepared by the Australian Government Civil Aviation Safety Authority, that noted "aviation authorities have established that an exhaust plume with a vertical velocity in excess of 4.3 meters per second (m/s) may cause damage to an aircraft airframe or upset an aircraft when flying at low levels" (CASA 2004). In their safety study on thermal plumes the FAA noted that they "do not necessarily approve/disapprove or warrant the data contained in the CASA AC 139-05." The safety team accepted "the information and data contained in AC 139-05 as a valid representation of hazardous exhaust velocities" (FAA 2006).

Using the Spillane Approach methodology, staff calculated worst-case average plume vertical velocities at different heights above the PPEC's stacks[5] to assess potential impacts to aircraft. Calculations assumed the worst-case meteorological conditions (cool temperatures and calm winds) and all three turbines operating at full load, when the maximum upward plume velocity would be generated. (See **Appendix TT-1** for detailed results of the plume velocity analysis for the PPEC.)

From these calculations, staff determined that average vertical velocity for a single plume would be 4.3 m/s or higher up to a height of 1,080 feet AGL. At this height, two adjacent plumes would be sufficiently large to merge. For the case of two merged plumes under these conditions, average plume vertical velocity would be 4.3 m/s or higher up to a height of approximately 1,720 feet AGL. For the very unlikely event of all three plumes merging, average plume vertical velocity for the combined plumes would be 4.3 m/s or higher up to a height of approximately 2,280 feet AGL. However, given the very remote possibility of three plumes merging (see **Appendix TT-1**), staff considered the realistic worst-case scenario as two plumes merging, creating an average plume vertical velocity of 4.3 m/s or higher up to a height of 1,720 feet AGL.

High velocity thermal plumes could present a potentially significant hazard to aircraft performing overflights of the PPEC at low altitudes; therefore, staff has proposed Conditions of Certification **TRANS-8** and **TRANS-9**. **TRANS-8** would require lighting of the exhaust stacks, consistent with FAA requirements, alerting pilots to the presence of the facility and reducing the potential for inadvertent overflight and exposure to high-velocity thermal plumes. **TRANS-9** would provide a means to advise pilots of the potential hazard to flight associated with the plumes and the need to avoid overflight of the facility below 1,720 feet AGL. These measures would include: issuance of a Notice to Airmen (NOTAM); amendment of the Airport/Facility Directory; revision of the San Diego Sectional Chart; and addition of a new remark to the Automated Surface Observing System (ASOS).

With these mitigation measures, impacts to aviation would be less than significant. Given the relatively small number of aircraft operations over the project area, the fact that aircraft do not need to fly over the project site to enter or depart the traffic pattern, the small 10-acre footprint of the project, and the wide open airspace in the general area, pilots would have the flexibility to avoid direct overflight of the PPEC while conducting their normal operations.

PPEC Operation Impacts Conclusion

With implementation of the conditions of certification discussed above, impacts to ground and air transportation from operation of the PPEC would be less than significant.

[5] At 300 feet AGL, the cooling tower would generate plumes of only 3.81 m/s vertical velocity, less than the threshold of 4.3 m/s. This velocity would decrease with altitude and be of no concern at altitudes where planes would fly. Therefore, the cooling tower is not a concern, and staff only discussed thermal plumes from the exhaust stacks.

COMPLIANCE WITH LORS

Traffic and Transportation Table 8 provides an assessment of the PPEC's compliance with applicable laws, ordinances, and regulations (LORS) pertaining to traffic and transportation.

TRAFFIC AND TRANSPORTATION Table 8
Project Compliance with Adopted Traffic and Transportation LORS

Applicable Law	Description	Consistency
Federal		
Title 49, Code of Federal Regulations, Parts 171-177	Requires proper handling and storage of hazardous materials during transportation.	**Consistent.** The project owner would conform to this law by requiring shippers of hazardous materials to use the required markings on their transportation vehicles. Also, **TRANS-5** ensures compliance by requiring that the project owner contract with licensed hazardous material and waste hauler companies.
Title 14, Code of Federal Regulations, Section 77.13 (2)(i)	This regulation requires the project owner to notify the Federal Aviation Administration (FAA) of construction structures with a height greater than 200 feet from grade or greater than an imaginary surface extending outward and upward at a slope of 100 to 1 from the nearest point of the nearest runway of an airport with at least one runway more than 3,200 feet in length.	**Consistent.** The PPEC's three 100-foot tall exhaust stacks would be the tallest permanent structures at the facility. This height does not exceed the threshold of 200 feet or the 100 to 1 (horizontal/vertical) slope threshold of 158 feet, and therefore does not require the project owner to file FAA Form 7460-1, Notice of Proposed Construction or Alteration. However, construction of the PPEC would involve approximately 200-foot high cranes and would require FAA notification. For project compliance with FAA regulations, staff is proposing Condition of Certification **TRANS-7**, which would require the project owner to submit a Form 7460-1 "Notice of Proposed Construction or Alteration" regarding the construction cranes to the FAA.
State		
California Vehicle Code, Sections 13369, 15275, 15278	Requires licensing of drivers and the classification of license for the operation of particular types of vehicles. A commercial driver's license is required to operate	**Consistent.** The project owner would require that contractors and employers be properly licensed and endorsed when operating such vehicles.

	commercial vehicles. An endorsement issued by the Department of Motor Vehicles (DMV) is required to drive any commercial vehicle identified in Section 15278.	**TRANS-1**, which requires proper driver licensing, ensures compliance.
California Vehicle Code, Sections 31303-31309	Requires transportation of hazardous materials to be on the state or interstate route that offers the shortest overall transit time possible.	**Consistent.** The project owner would require shippers of hazardous materials to use the shortest route possible to and from the project site. The proposed routes are consistent with this requirement. Also, **TRANS-5** (see above for explanation) ensures compliance.
California Vehicle Code, Sections 31600-31620	Regulates the transportation of explosive materials.	**Consistent.** The PPEC would not use explosive materials as defined in Section 12000 of the Health and Safety Code.
California Vehicle Code, Sections 32100-32109	Requires shippers of inhalation hazards in bulk packaging comply with rigorous equipment standards, inspection requirements, and route restrictions.	**Consistent.** The project owner would require shippers of inhalation hazards (including ammonia) to comply with all route restrictions, equipment standards, and inspection requirements. Also, **TRANS-5** (see above for explanation) requires compliance.
California Vehicle Code, Sections 34000-34100	Establishes special requirements for vehicles having a cargo tank and for hazardous waste transport vehicles and containers, as defined in Section 25167.4 of the Health and Safety Code.	**Consistent.** The project owner would require shippers of hazardous materials to maintain their hazardous material transport vehicles in a manner that would enable the vehicles to pass California Highway Patrol inspections. Also, **TRANS-5** (see above for explanation) requires compliance.
California Vehicle Code, Section 35550	Regulates weight guidelines and restrictions upon vehicles traveling on freeways and highways. A single axle load shall not exceed 20,000 pounds, the load on any one wheel or wheels supporting one end of an axle is limited to 10,500 pounds, and the front steering axle load is limited to 12,500 pounds.	**Consistent.** The project owner would ensure compliance with weight restrictions and would require heavy haulers to obtain necessary permits prior to delivery of any heavy haul load. Also, **TRANS-1** (which requires the project owner to comply with limitations on vehicle sizes and weights, driver licensing, and truck routes) requires compliance.
California Vehicle Code, Section 35551	Defines the maximum overall gross weight as 80,000 pounds and mandates that the gross weight of each set of tandem axles not exceed 34,000 pounds.	**Consistent.** The project owner would require compliance with weight restrictions and would require heavy haulers to obtain necessary permits prior to delivery of any heavy haul load.

		Also, **TRANS-1** (see above for explanation) requires compliance.
California Vehicle Code, Section 35780	Requires a single-trip transportation permit to transport oversized or excessive loads over state highways.	**Consistent.** The project owner would comply with this code by requiring that heavy haulers obtain a Single-Trip Transportation Permit for oversized loads. Also, **TRANS-1** (see above for explanation) requires compliance.
California Streets and Highways Code, Sections 660, 670, 672, 1450, 1460, 1470, 1480 et seq., 1850-1852	Requires encroachment permits for projects involving excavation in state and county highways and city streets.	**Consistent.** The project owner would comply by acquiring the necessary permits and approval from Caltrans, the City of San Diego, and the County of San Diego with regard to encroachment into public rights-of-way, as required by **TRANS-4**.
California Health and Safety Code, Section 25160	Addresses the safe transport of hazardous materials	**Consistent.** The project owner would comply by requiring that shippers of hazardous wastes are properly licensed by the Department of Toxic Substances Control (DTSC), and that hazardous waste transport vehicles are in compliance with DTSC requirements. **TRANS-1** and **TRANS-5** (see above for explanation) require compliance.
California Department of Transportation CA MUTCD Part 6 (Traffic Manual)	Provides traffic control guidance and standards for continuity of function (movement of traffic, pedestrians, bicyclists, transit operations), and access to property/utilities when the normal function of a roadway is suspended.	**Consistent.** **TRANS-3** requires the project owner to prepare and implement a Traffic Control Plan.
Local		
County of San Diego, General Plan, Mobility Element, Goal M-6, Policy M-6.1	Requires minimization of heavy truck traffic (generally more than 33,000 pounds and mostly used for long-haul purposes) near schools and within villages and residential neighborhoods by designating official truck routes, establishing incompatible weight limits on roads unintended for frequent truck traffic, and carefully locating truck-intensive land uses.	**Consistent.** **TRANS-1** (see above for explanation) requires compliance.

County of San Diego, General Plan, Mobility Element, Goal M-2, Policy M-2.1	Requires development projects to provide associated road improvements necessary to achieve a level of service of "D" or higher on all Mobility Element roads except for those where a failing level of service has been accepted by the County pursuant to the criteria specifically identified in the accompanying text box (Criteria for Accepting a Road Classification with Level of Service E/F). When development is proposed on roads where a failing level of service has been accepted, feasible mitigation is required in the form of road improvements or a fair share contribution to a road improvement program, consistent with the Mobility Element road network.	**Consistent.** All state highways, roadways, and intersections near the PPEC would continue to function at LOS D or better during project construction. During project operations, this would also be true, with the exception of SR-54 (between SR-125 and I-5) and I-5 (north of SR-54), which would operate at LOS F and E, respectively. However, traffic impacts to SR-54 and I-5 would be less than significant because they are already operating at LOS F and E, and transportation of project wastewater would only add an additional 42 daily PCE trips, which is less than 0.1% of pre-operational baseline traffic. Although impacts would be less than significant, additional traffic trips would be added to these already impacted roads. **TRANS-6** would ensure compliance with Policy M-2.1 by requiring payment of transportation impact fees to San Diego County. (See below.)
City of San Diego Traffic Impact Study Manual	The level of service standard for freeways, roadways, and intersections in the city of San Diego is **LOS D**. For undeveloped locations, the goal is to achieve an **LOS C**.	**Consistent.** All state highways, roadways, and intersections near the PPEC and within the city of San Diego would function at LOS D or better during both project construction and operation. This is a developed area, so the LOS D standard would apply.
San Diego Transportation Impact Fee (TIF) Program/Ordinance	Enables the County to implement Transportation Impact Fee programs. Requires payment of fees that constitute the proposed project's fair share contribution towards construction costs of intersections and traffic signals or future County approved alternatives. The fee shall be computed based on the applicable TIF rate for the primary use of the project, per the County of San Diego TIF Ordinance Update.	**Consistent.** Condition of Certification **TRANS–6** (which requires payment of Transportation Fees) would ensure compliance.
City of San Diego Municipal Code, Chapter 8: Traffic and Vehicles, Article 5: Special Regulations	Requires a permit to transport heavy and oversize loads.	**Consistent.** **TRANS-1** (see above for explanation) requires compliance.
County of San Diego East Otay Mesa Business Park Specific Plan, Appendix 5, A-5.12: Facility Phasing, Financing and	Requires public facility improvements for East Otay Mesa to be "financed through the equitable participation of all affected property owners and	**Consistent / Not Applicable.** The East Otay Mesa property owners have not developed a community financing district. Fees

Implementation	developers". The six categories of public facility improvements include: On-site Roads and Infrastructure, On-site Capital Facilities, On-Site Operation and Maintenance, Off-site Roads, Off-Site Capital Facilities and Public Transit Service.	for public facility improvements can only be required when the community financing district is established.

CUMULATIVE IMPACTS

A project may result in a significant adverse cumulative impact when its effects are cumulatively considerable. *Cumulatively considerable* means that the incremental effects of an individual project are significant when viewed in connection with the effects of (1) past projects; (2) other current projects; and (3) probable future projects (California Code of Regulations, Title 14, Section 15130).

Traffic Impacts

Staff reviewed known past, current, and probable future projects in the vicinity of the proposed PPEC project, which staff defined as the community of Otay Mesa in San Diego County. Access to the development projects located within the vicinity of the PPEC would be from Interstates 805, State Routes 905 and 125 and/or Otay Mesa Road and Alta Road. The location of these projects with respect to the PPEC is shown in **Traffic and Transportation Figure 3. Traffic and Transportation Table 9** (below) lists these known projects, their trip generation, and their statuses (under review, approved, built).

Traffic and Transportation Table 9
Development Considered in the Cumulative Condition[1]

Project Number	Project	County	Distance from Project Site	Project Permits	Status of Project
1	**Vulcan Batch Plant**	San Diego	Within 1 mile of project site	**Concrete & Asphalt Batch Plant**: The project is a Site Plan to construct and operate concrete and asphalt batch plants.	**Approved and Under Construction** The Site Plan for this project has been approved. Construction is almost complete and is awaiting final inspection.
2	**Otay Hills Construction Aggregate Extraction Operation**	San Diego	Within 1 mile of project site	**Aggregate Excavation**: MUP and Reclamation Plan for excavation of construction aggregate.	**Under Review** The Major Use Permit application for this project is in process.
3	**Corrections Corporation of America Correctional Facility/East Mesa Detention Facility**	San Diego	Within 1 mile of project site	**Detention Facility**: Modified Major Use Permit (MUP) for a secure detention facility to be constructed in two phases. Original project is proposed to be relocated to the southeasterly portion of the project area previously approved under MUP 98-001.	**Approved** The Modified Major Use Permit has been approved. Building permits were submitted but were cancelled by the project owner and never approved.
4	**Otay Crossings Commerce Park**	San Diego	Within 1 mile of project site	**Industrial Subdivision**: Includes Specific Plan Amendment. The Tentative Map will subdivide the parcel into 56 industrial lots. The future right-of-way for SR-11 traverses the site, and the future U.S Port-of-Entry is located at the southern boundary of the site.	**Under Review** The tentative map for this project is in process.
5	**International Industrial Park**	San Diego	Within 1 mile of project site	**Technology/Business Park**: Tentative Map to subdivide vacant land into 10 parcels for technology/business park use.	**Under Review** The tentative map for this project is in process.

PPEC 2011a, AFC, Table 5.18-1 and confirmed by San Diego Planning Staff 10/13/11

Trips generated by the projects listed in **Traffic and Transportation Table 9** share the transportation network with trips generated by the PPEC and may combine with PPEC trips to result in cumulative impacts to the level-of-service (LOS) of nearby highways, roadways, and intersections. Cumulative impacts would be a concern during construction of the PPEC, but not during operations; PPEC operations would generate a maximum of 24 daily one-way vehicle trips, a minimal increase in traffic that would have a less than significant impact on overall traffic counts.

None of the above mentioned projects would be constructed concurrently with the PPEC. Therefore, none of these projects would combine with PPEC construction trips to create significant cumulative impacts.

Aviation Impacts

Staff also evaluated whether the above projects could combine with the proposed PPEC to create cumulative impacts to aviation. The only one which could do so is the Otay Mesa Power Plant, located adjacent to the PPEC, which has 131-foot tall HRSG stacks, two natural-gas fired combustion turbine generators, four wet surface condensers, and one auxiliary boiler, all of which produce thermal plumes.

Air Quality staff evaluated the average vertical velocities of the plumes generated by the Otay Mesa Power Plant and found that, at 300 feet, the lowest altitude evaluated, the condensers and boiler produce plumes of 3.22 m/s and 1.85 m/s, respectively, which decrease in velocity with increasing altitude. These velocities are below the 4.3 m/s threshold for more than light turbulence, and 300 feet is lower than aircraft would generally fly. For a single gas turbine, Air Quality staff found that the average plume vertical velocity drops below 4.3 m/s at a height of approximately 560 feet AGL. The plume diameter at this height is around 37 meters, which is less than the distance between the two turbines (40 meters), so the plumes do not merge. Aircraft do not generally fly at altitudes as low as 560 feet AGL, although helicopters in the area may fly at lower altitudes and be affected by a plume at this altitude.

As discussed earlier in the **Thermal Plumes** section, staff has proposed Conditions of Certification **TRANS-8** and **TRANS-9** for the PPEC. **TRANS-8** would require lighting of the exhaust stacks, consistent with FAA requirements, alerting pilots to the presence of the facility and reducing the potential for inadvertent overflight and exposure to high-velocity thermal plumes. **TRANS-9** would provide a means to advise pilots of the potential hazard to flight associated with the plumes and the need to avoid overflight of the facility below 1,720 feet AGL. These measures would include: issuance of a Notice to Airmen (NOTAM); amendment of the Airport/Facility Directory; revision of the San Diego Sectional Chart; and addition of a new remark to the Automated Surface Observing System (ASOS).

TRANS-8 and **TRANS-9** would prevent pilots from overflying the PPEC site and would likely also indirectly prevent overflight of the adjacent Otay Mesa Power Plant site. Also, given the relatively small number of aircraft operations over the project area, the fact that aircraft do not need to fly over either the PPEC or Otay Mesa sites to enter or depart Brown Field's traffic pattern, and the wide open airspace in the general area, pilots would have the flexibility to avoid direct overflight of the PPEC and the Otay Mesa Power Plant while conducting their normal operations. Therefore, cumulative impacts to aviation from plumes would be less than significant.

With regard to structure height, the Otay Mesa Power Plant's HRSG stacks are 131 feet tall, less than the 158-foot and 200-foot thresholds for FAA notification discussed earlier. As noted earlier, the PPEC's construction cranes would be approximately 200

feet tall and would require that the FAA be notified; staff is proposing **TRANS-7** to require FAA notification. All other structure heights for both power plants would be less than 158 feet tall and therefore would not exceed the FAA's height notification thresholds. Because of this, there would be no cumulative impacts to aviation with regard to obstruction of navigable airspace.

CONCLUSIONS AND RECOMMENDATIONS

Staff has analyzed the proposed PPEC's impacts to the nearby traffic and transportation system. With implementation of the proposed conditions of certification listed below, the PPEC would comply with all applicable LORS related to traffic and transportation and would result in less than significant impacts to the traffic and transportation system.

1. Implementation of Condition of Certification **TRANS-1** would ensure compliance with applicable jurisdictions' limits on vehicle sizes and weights, driver licensing, truck routes, and any other applicable limitations, and would require the project owner to obtain all necessary transportation permits.

2. Implementation of Condition of Certification **TRANS-2** would ensure that any public road, easement, or right-of-way damaged by project construction would be restored to its original condition.

3. Implementation of Condition of Certification **TRANS-3** would require development and implementation of a traffic control plan to reduce construction traffic impacts to LOS and to ensure sufficient parking and emergency access to the site.

4. Implementation of Condition of Certification **TRANS-4** would require obtainment of the necessary encroachment permits from applicable jurisdictions.

5. Implementation of Condition of Certification **TRANS-5** would require the project owner to contract with licensed hazardous material and waste hauler companies in order to comply with all applicable regulations.

6. Implementation of Condition of Certification **TRANS-6** would require payment of any necessary traffic and transportation fees to San Diego County.

7. Condition of Certification **TRANS-7** would require the project owner to notify the FAA that the construction cranes would be 200 feet tall.

8. Condition of Certification **TRANS-8** would require the project owner to install obstruction marking and lighting on the exhaust stacks and construction cranes.

9. Condition of Certification **TRANS-9** would provide a means to advise pilots of the potential hazard to flight associated with the project-generated exhaust plumes and the need to avoid overflight of the facility below 1,720 feet AGL.

PROPOSED CONDITIONS OF CERTIFICATION

TRANS-1 Roadway Use Permits and Regulations

The project owner shall comply with limitations imposed by Caltrans District 11 and other relevant jurisdictions, including the City of San Diego and County of San Diego, on vehicle sizes and weights, driver licensing, and truck routes. In addition, the project owner or its contractor shall obtain necessary transportation permits from Caltrans and all relevant jurisdictions for roadway use.

Verification: In the Monthly Compliance Reports (MCRs), the project owner shall report permits received during that reporting period. In addition, the project owner shall retain copies of permits and supporting documentation on-site for Compliance Project Manager (CPM) inspection if requested.

TRANS- 2 Restoration of All Public Roads, Easements, and Rights-of-Way

The project owner shall restore all public roads, easements, and rights-of-way that have been damaged due to project-related construction activities. Restoration of significant damage which could cause hazards (such as potholes) must take place immediately after the damage has occurred. The restoration shall be completed in a timely manner to the road's original condition or better in compliance with the applicable jurisdiction's (City or County of San Diego) standards.

Verification: Prior to the start of site mobilization, the project owner shall photograph or videotape of all affected public roads, easements, right-of-way segment(s), and/or intersections. The project owner shall provide the photograph or videotape to the CPM and the affected local jurisdiction(s). The purpose of this notification is to request that these jurisdictions consider postponement of any planned public right-of-way repair or improvement activities in areas affected by project construction until construction is completed, and to coordinate any concurrent construction-related activities that cannot be postponed.

If damage to public roads, easements, or rights-of-way occurs during construction, the project owner shall notify the CPM and the affected local jurisdiction(s) to identify sections of public right-of-way to be repaired. At that time, the project owner shall establish a schedule for completion and approval of the repairs. Following completion of any public right-of-way repairs, the project owner shall provide to the CPM letters signed by the affected local jurisdiction(s) stating their satisfaction with the repairs.

TRANS-3 Traffic Control Plan, Heavy Hauling Plan, and Parking/Staging Plan

Prior to the start of construction of the PPEC, the project owner shall prepare a Traffic Control Plan (TCP) for the PPEC's construction and operations traffic. The TCP shall address the movement of workers, vehicles, and materials, including arrival and departure schedules and designated workforce and delivery routes.

The project owner shall consult with the Caltrans District 11 office and the applicable local jurisdictions in the preparation and implementation of the Traffic Control Plan (TCP). The project owner shall submit the proposed TCP to Caltrans District 11 and applicable local jurisdictions in sufficient time for review and comment, and to the Energy Commission Compliance Project Manager (CPM) for review and approval prior to the proposed start of construction and implementation of the plan.

The Traffic Control Plan (TCP) shall include:

- Provisions for redirection of construction traffic with a flag person as necessary to ensure traffic safety and minimize interruptions to non-construction related traffic flow,
- Placement of necessary signage, lighting, and traffic control devices at the project construction site and lay-down areas;
- A heavy-haul plan addressing the transport and delivery of heavy and oversized loads requiring permits from the California Department of Transportation (Caltrans), other state or federal agencies, and/or the affected local jurisdictions;
- Location and details of construction along affected roadways at night, where permitted;
- Temporary closure of travel lanes or disruptions to street segments and intersections during construction activities;
- Traffic diversion plans (in coordination with the City and County of San Diego) to ensure access during temporary lane/road closures;
- Access to residential and/or commercial property located near construction work and truck traffic routes;
- Insurance of access for emergency vehicles to the project site;
- Advance notification to residents, businesses, emergency providers, and hospitals that would be affected when roads may be partially or completely closed;
- Identification of safety procedures for exiting and entering the site access gate;
- Parking/Staging Plan (PSP) for all phases of project construction and for project operation.

Verification: At least 60 calendar days prior to the start of construction, the project owner shall submit the TCP to the applicable agencies for review and comment and to the CPM for review and approval. The project owner shall also provide the CPM with a copy of the transmittal letter to the agencies requesting review and comment.

At least 30 calendar days prior to the start of construction, the project owner shall provide copies of any comment letters received from the agencies, along with any changes to the proposed development plan, to the CPM for review and approval.

TRANS-4 Encroachment into Public Rights-of-Way

Prior to any ground disturbance, improvements, or obstruction of traffic within any public road, easement, or right-of-way, the project owner or its contractor(s) shall coordinate with all relevant jurisdictions, including the City and County of San Diego and Caltrans District 11, to obtain all required encroachment permits and comply with all applicable regulations.

Verification: At least 10 days prior to ground disturbance or interruption of traffic in or along any public road, easement, or right-of-way, the project owner shall provide copies of all permit(s), relevant to the affected location(s), received from Caltrans or any other affected jurisdiction/s to the CPM. In addition, the project owner shall retain copies of the issued/approved permit(s) and supporting documentation in its compliance file for a minimum of 180 calendar days after the start of commercial operation.

TRANS-5 Transportation of Hazardous Materials

The project owner shall contract with licensed hazardous material delivery and waste hauler companies in order to obtain the necessary permits and/or licenses from the California Highway Patrol, Caltrans District 11, and any relevant local jurisdictions for the transportation of hazardous materials. 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 the Annual Reports during operation, the owner shall provide copies of all permits/licenses obtained for the transportation of hazardous substances.

TRANS-6 Payment of Transportation Fees

The property owner shall pay traffic and transportation fees to San Diego County for development of the PPEC. These fees may include but not be limited to the County of San Diego Transportation Impact Fee (TIF).

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall submit plans for the proposed PPEC to San Diego County, pay any necessary transportation-related fees, and provide documentation of exemption or payment to the CPM. In addition, the project owner shall retain copies of this documentation in its compliance file for a minimum of 180 calendar days after the start of commercial operation.

TRANS-7 FAA Notification of Construction Cranes

The project owner shall file a Form 7460-1 with the FAA regarding the use of 200 foot-tall construction cranes that will penetrate the navigable airspace for Brown Field and obtain an FAA Determination of No Hazard to Navigable Airspace.

Verification: At least 90 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 Brown Field, U.S. Department of Homeland Security, U.S. Customs and Border Control, and San Diego County Fire Department for review and comment, and to the CPM for review and approval. The project owner shall also provide copies of any correspondence from the agencies identified above to the CPM for review and approval.

TRANS-8 Obstruction Marking and Lighting

The project owner shall install obstruction marking and lighting on the exhaust stacks and construction cranes, consistent with FAA requirements, as expressed in the following documents:

- FAA Advisory Circular 70/7460-1K
- FAA Safety Alert for Operators (SAFO) 09007.

Permanent lighting consistent with all requirements shall be installed at least 60 days prior to operation of the PPEC. Lighting shall be operational 24 hours a day, 7 days a week 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 requirements.

Verification: At least 60 days prior to the start of construction, the project owner shall submit to the CPM for approval final design plans for the power plant exhaust stacks and construction cranes that depict the required air traffic obstruction marking and lighting.

At least 60 days prior to plant operation, the project owner shall install permanent obstruction marking and lighting consistent with FAA requirements and shall inform the CPM in writing within 10 days of installation. The lighting shall be inspected and approved by the CPM (or designated inspector) within 30 days of installation.

TRANS-9 Pilot Notification and Awareness

The project owner shall initiate the following actions to ensure pilots are aware of the project location and potential hazards to aviation:

- Submit a letter to the FAA requesting a Notice to Airmen (NOTAM) be issued advising pilots of the location of the PPEC and recommending avoidance of overflight of the project site below 1,720 feet AGL. The letter should also request that the NOTAM be maintained in active status until all navigational charts and Airport Facility Directories (AFDs) have been updated.
- Submit a letter to the FAA requesting a power plant depiction symbol be placed at the PPEC site location on the San Diego Sectional Chart with a notice to “avoid overflight below 1,720 feet AGL”.

- Submit a request to and coordinate with the Brown Field Airport Manager to add a new remark to the Automated Surface Observing System (ASOS) identifying the location of the PPEC and advising pilots to avoid direct overflight below 1,720 feet AGL as they approach or depart the airport.
- Request that Southern California TRACON and/or the San Diego Air Traffic Control Center submit aerodrome remarks describing the location of the PPEC plant and advising against direct overflight below 1,720 feet AGL to the:
  - FAA AeroNav Services, formerly the FAA National Aeronautical Charting Office (Airport/Facility Directory)
  - Jeppesen Sanderson Inc. (JeppGuide Airport Directory, Western Region)
  - Airguide Publications (Flight Guide, Western States)

Verification: Within 30 days following the start of construction, the project owner shall submit draft language for the letters of request to the FAA (including Southern California TRACON) and Brownfield Airport to the CPM for review and approval.

At least 60 days prior to the start of operations, the project owner shall submit the required letters of request to the FAA and request that Southern California TRACON submit aerodrome remarks to the listed agencies. The project owner shall submit copies of these requests to the CPM. A copy of any resulting correspondence shall be submitted to the CPM within 10 days of receipt.

If the project owner does not receive a response from any of the above agencies within 45 days of the request (or by 15 days prior to the start of operations) the project owner shall follow up with a letter to the respective agency/ies to confirm implementation of the request. A copy of any resulting correspondence shall be submitted to the CPM within 10 days of receipt.

The project owner shall contact the CPM within 72 hours if notified that any or all of the requested notices cannot be implemented. Should this occur, the project owner shall appeal such a determination, consistent with any established appeal process and in consultation with the CPM. A final decision from the jurisdictional agency denying the request, as a result of the appeal process, shall release the project owner from any additional action related to that request and shall be deemed compliance with that portion of this condition of certification.

APPENDIX TT-1: PLUME VELOCITY ANALYSIS

Prepared by Tao Jiang, Ph.D., P.E.

INTRODUCTION

The following provides the assessment of the Pio Pico Energy Center (PPEC) cooling tower, and gas turbines exhaust stack plume vertical velocities. Staff completed calculations to determine the worst-case vertical plume velocities at different heights above the stacks based on the applicant's proposed facility design.

PROJECT DESCRIPTION

PPEC is a proposed 300 megawatt (MW) simple-cycle electrical generating facility. The proposed PPEC includes a 12-cell partial dry cooling tower and three LMS100 natural-gas fired combustion turbine generators (CTG). There are no other plume sources at the PPEC site.

PLUME VELOCITY CALCULATION METHOD

Staff has selected a calculation approach from a technical paper (Best 2003) to estimate the worst-case plume vertical velocities for the PPEC exhausts. The calculation approach, which is also known as the "Spillane approach", used by staff is limited to calm wind conditions, which are the worst-case wind conditions. The Spillane approach uses the following equations to determine vertical velocity for single stacks during dead calm wind (i.e. wind speed = 0) conditions:

(1) $(V*a)^3 = (V*a)_o^3 + 0.12*F_o*[(z-z_v)^2-(6.25D-z_v)^2]$

(2) $(V*a)_o = V_{exit}*D/2*(T_a/T_s)^{0.5}$

(3) $F_o = g*V_{exit}*D^2*(1-T_a/T_s)/4$

(4) $Z_v = 6.25D*[1-(T_a/T_s)^{0.5}]$

Where: V = vertical velocity (m/s), plume-average velocity
a = plume top-hat radius (m, increases at a linear rate of $a = 0.16*(z- z_v)$
F_o= initial stack buoyancy flux m^4/s^3
z = height above ground (m)
z_v= virtual source height (m)
V_{exit}= initial stack velocity (m/s)
D = stack diameter (m)
T_a= ambient temperature (K)
T_s= stack temperature (K)
g = acceleration of gravity (9.8 m/s^2)

Equation (1) is solved for V at any given height above ground that is above the momentum rise stage for single stacks (where z > 6.25D) and at the end of the plume merged stage for multiple plumes. This solution provides the plume-average velocity for the area of the plume at a given height above ground; the peak plume velocity would be two times higher than the plume-average velocity predicted by this equation. As can be seen the stack buoyancy flux is a prominent part of Equation (1). The calm condition calculation basis clearly represents the worst-case conditions, and the vertical velocity will decrease substantially as wind speed increases.

For multiple stack plumes, where the stacks are equivalent, the multiple stack plume velocity during calm winds was calculated by staff in a simplified fashion, 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

Staff notes that 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). However, the use of this approach on long linear cooling towers such as the cooling tower designed for the PPEC project will likely over predict the combined plume velocities.

VERTICAL PLUME VELOCITY ANALYSIS

COOLING TOWER DESIGN AND OPERATING PARAMETERS

The design and operating parameter data for the project's cooling tower are provided in **Plume Velocity Table 1**.

Plume Velocity Table 1
PPEC Cooling Tower Operating and Exhaust Parameters

Parameter	Cooling Tower Design Parameters
Number of Cells	12 Cells (1 by 12 Linear Design)
Cell Height (feet)	22
Cell Stack Diameter (feet)	13
Stack Velocity (ft/sec)	33.8
Stack Temperature (°F)	86
Ambient Temperature (°F)	63

Source: PPEC 2011a, PPEC 2011c

The applicant provided exhaust data for the average ambient case, which is a reasonable case for a peaker project that is expected to operate mainly during hot summer conditions that correspond to maximum electrical load demand.

GAS TURBINE/HRSG DESIGN AND OPERATING PARAMETERS

The design and operating parameter data for the gas turbines stack exhaust are provided in **Plume Velocity Table 2**.

Plume Velocity Table 2
PPEC Gas Turbine Operating and Exhaust Parameters

Operating Mode	Ambient Temp (°F)	Stack Height (feet)	Stack Diameter (feet)	Stack Vel (ft/sec)	Stack Temp (°F)
Hot Peak	110	100	14.5	88.60	802
Avg Peak	63	100	14.5	92.22	785
Cold Peak	30	100	14.5	91.81	754
Hot Low	122	100	14.5	74.01	825
Avg Low	63	100	14.5	65.24	831
Cold Low	30	100	14.5	65.16	820

Source: PPEC 2011a, PPEC 2011c

For the worst-case analysis for this plume source the 63°F ambient condition for CTG at peak load, average temperature case was selected to determine the worst-case velocity conditions. The average ambient case is both a more likely operating scenario for a peaking facility and has calm-wind velocity results that are essentially as conservative as the cold peak case.

PLUME VELOCITY CALCULATION RESULTS

Using the Spillane calculation approach, the plume average vertical velocity at different heights above ground was determined by staff for calm conditions. Staff's calculated plume average velocity values for the cooling tower are provided in **Plume Velocity Table 3.** The combined cooling tower velocities are calculated by combining all 12 cells by assuming the multiple cooling tower cell plumes have completely merged.

As explained in the Transportation and Traffic section a plume average vertical velocity of 4.3 m/s has been determined by staff to be the critical velocity of concern to light aircraft. This is based on the Australian Civil Aviation Safety Authority (CASA) advisory circular (CASA 2003). Vertical velocities below this level are not of concern to light aircraft. The cooling tower exhausts were found to have plume average velocities less than 4.3 meters per second at or above 500 feet above ground level.

Plume Velocity Table 3
PPEC Cooling Tower Vertical Plume Velocities (m/s)

Height	12-Cell Cooling Tower
300	3.81
400	3.26
500	2.93
600	2.71
700	2.55
800	2.42
900	2.31
1,000	2.23
1,100	2.15
1,200	2.08
1,300	2.02
1,400	1.97
1,500	1.93
1,600	1.88
1,700	1.84
1,800	1.81
1,900	1.77
2,000	1.74

PPEC has 3 turbines in a linear configuration. When the spacing between the gas turbines is not large enough, the exhaust plumes may spread enough to significantly merge prior to the velocity lowering to vertical velocities below levels of concern. Therefore, the gas turbine plume size and vertical velocities for different plume merging scenarios, where the value N is equal to the number of fully merged plumes, were calculated and are presented in **Plume Velocity Table 4.**

Plume Velocity Table 4
PPEC Turbine Plume Size and Vertical Plume Velocities

Height (ft)		Plume Diameter (m) [a]	Plume Velocity (m/s) [b]		
			N=1	N=2	N=3
300		16.396	7.99	Not Merged	Not Merged
400		26.15	6.66	Not Merged	Not Merged
500		35.904	5.94	Not Merged	Not Merged
600		45.657	5.47	Not Merged	Not Merged
700		55.411	5.11	Not Merged	Not Merged
800		65.165	4.84	Not Merged	Not Merged
900		74.918	4.62	Not Merged	Not Merged
1000		84.672	4.43	Not Merged	Not Merged
1100		94.426	4.27	Not Merged	Not Merged
1200		104.18	4.13	Not Merged	Not Merged
1300		113.933	4.01	4.77	Not Merged
1400		123.687	3.9	4.64	Not Merged
1500		133.441	3.8	4.52	Not Merged
1600		143.194	3.71	4.42	Not Merged
1700		152.948	3.63	4.32	Not Merged
1800		162.702	3.56	4.23	Not Merged
1900		172.456	3.49	4.15	Not Merged
2000		182.209	3.43	4.08	Not Merged
2100		191.963	3.37	4.00	Not Merged
2200		201.717	3.31	3.94	Not Merged
2300		211.471	3.26	3.88	Not Merged
2400		221.224	3.21	3.82	4.23
2500		230.978	3.17	3.76	4.17
2600		240.732	3.12	3.71	4.11
2700		250.485	3.08	3.66	4.06
2800		260.239	3.04	3.62	4.00
2900		269.993	3.01	3.57	3.95
3000		279.747	2.97	3.53	3.91

Notes:
a – The separation between stacks is approximately 54 meters for two stacks and 108 meters for all stacks and the plumes will begin to merge when the plume diameter is the same as the separation and is assumed to be fully merged when the plume diameter is twice the stack separation.
b – Not Merged means not fully merged.

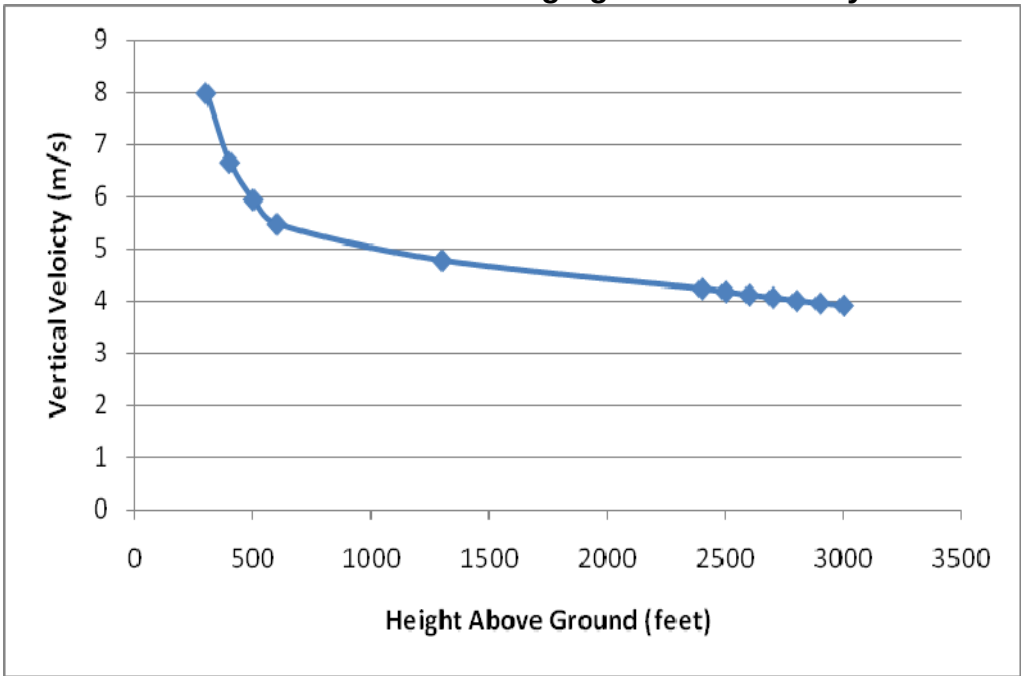
The values shown in **Plume Velocity Table 4** are worst-case values for peak load operation during average ambient temperatures, with dead calm wind conditions from ground level to the height for the 4.3 m/s vertical velocities. For other operating scenarios and ambient temperatures, the top heights for the 4.3 m/s vertical velocities

would be somewhat lower than these maximum values and aircraft flying above these levels should not be affected by vertical velocities that exceed 4.3 m/s.

The gas turbine plume average velocity is calculated to drop below 4.3 m/s at a height of approximately 1,080 feet for the single turbine plume (N=1). The plume diameter at this height is around 92m, which is larger than the distance of two adjacent turbines (54m). Therefore the merging of the two adjacent turbine plumes should be considered. In that case of two plumes fully merging (N=2), the average velocity is calculated to drop below 4.3 m/s at the height of 1,720 feet. The applicant proposed to use the most conservative scenario assuming all three plumes will fully merge (N=3), where plume average velocity is calculated to drop below 4.3 m/s at a height of approximately 2,280 feet. However, it is very unlikely that all three plumes can merge fully to allow this velocity given the stack separation and the height/atmospheric conditions needed for them to fully merge. Therefore staff proposes to use the scenario of two plume merging (N=2), which shows that the average velocity drops below 4.3 m/s at the height of 1,720 feet.

Plume Velocity Table 4 is based on a calculation procedure that does not indicate how the plumes begin to merge before they are fully merged. The plume velocity would not actually go up between 1,200 and 1,300 meters or between 2,300 and 2,400 meters, rather the velocity curve would be based on partial merging of the one stack, two fully merged exhaust plumes, and three fully merged exhaust plumes cases. This worst-case plume merging velocities, combining the velocity data from the three exhaust merging cases is shown in **Plume Velocity Figure 1**.

Plume Velocity Figure 1
PPEC Turbine Plume Merging Vertical Velocity



The velocity values listed above in **Plume Velocity Table 3** and **Plume Velocity Table 4** 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 velocity as shown in the table.

WIND SPEED STATISTICS

Plume Velocity Table 5 provides the calm wind speed statistics for Otay Mesa from meteorological data collected for 2006 through 2008. Calm winds for the purposes of the reported monitoring station statistics are those hours with average wind speeds below 1 knot (equal to 0.5 m/s). Calm or very low wind speeds can also occur for shorter periods of time within each of the monitored average hourly conditions. However, the shortest time resolution for the available meteorological data is one hour.

Plume Velocity Table 5
Calm Wind Statistics for Otay Mesa

Calm Wind Speed Statistics	
2006	20.1%
2007	17.6%
2008	23.6%
Average	20.4%

Source: PPEC 2011a

Calm/low wind speed conditions averaging an hour or longer appear to be frequent in the site area.

CONCLUSIONS

The calculated worst case calm wind condition vertical plume average velocities from the PPEC cooling towers are not predicted to exceed 4.3 m/s at heights at or above 500 feet above ground level. However, the calculated worst case calm wind condition vertical plume average velocities from the PPEC gas turbines are predicted to exceed 4.3 m/s at heights at or above 500 feet above ground level (1,720 feet). There are no other plume sources at the PPEC site, although the Otay Mesa power plant is immediately east of PPEC.

The vertical velocity from the equipment exhaust at a given height above the stack decreases as wind speed increases. However, the plume average vertical velocities for the gas turbines will remain relatively high, and would exceed 4.3 m/s above 500 feet above ground level, during calm or very low wind speed conditions. These low wind speed conditions lasting an hour or more occur reasonably frequently at the site location. Additionally, shorter periods of dead calm winds, lasting long enough to increase the vertical plume average velocity height up to its peak height, can also occur during hours with low average wind speeds.

PPEC is designed as a simple-cycle, peaking, and intermediate load facility. Each unit is proposed to be limited to operate no more than 4,000 hr/yr. Actual operation is likely to be considerably less, perhaps no more than 1,000 to 2,000 hours per year depending on electrical system load needs. The ambient condition used in this analysis represents the average ambient temperature case at the peak load, which is considered a reasonably conservative worst case for this peaking project that is expected to primarily operate during the summer.

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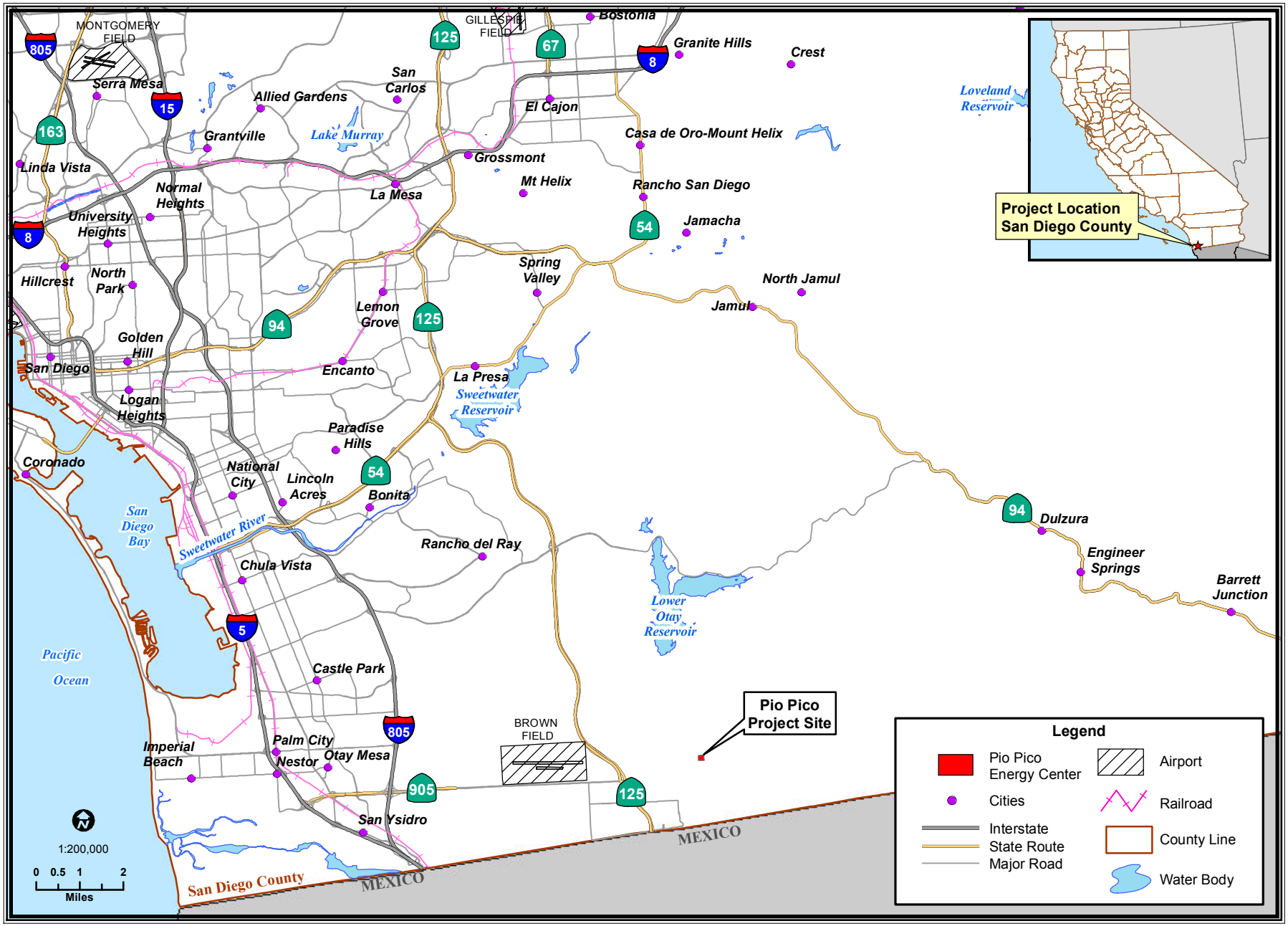
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TRAFFIC AND TRANSPORTATION - FIGURE 1

Pio Pico Energy Center - Regional Transportation Setting



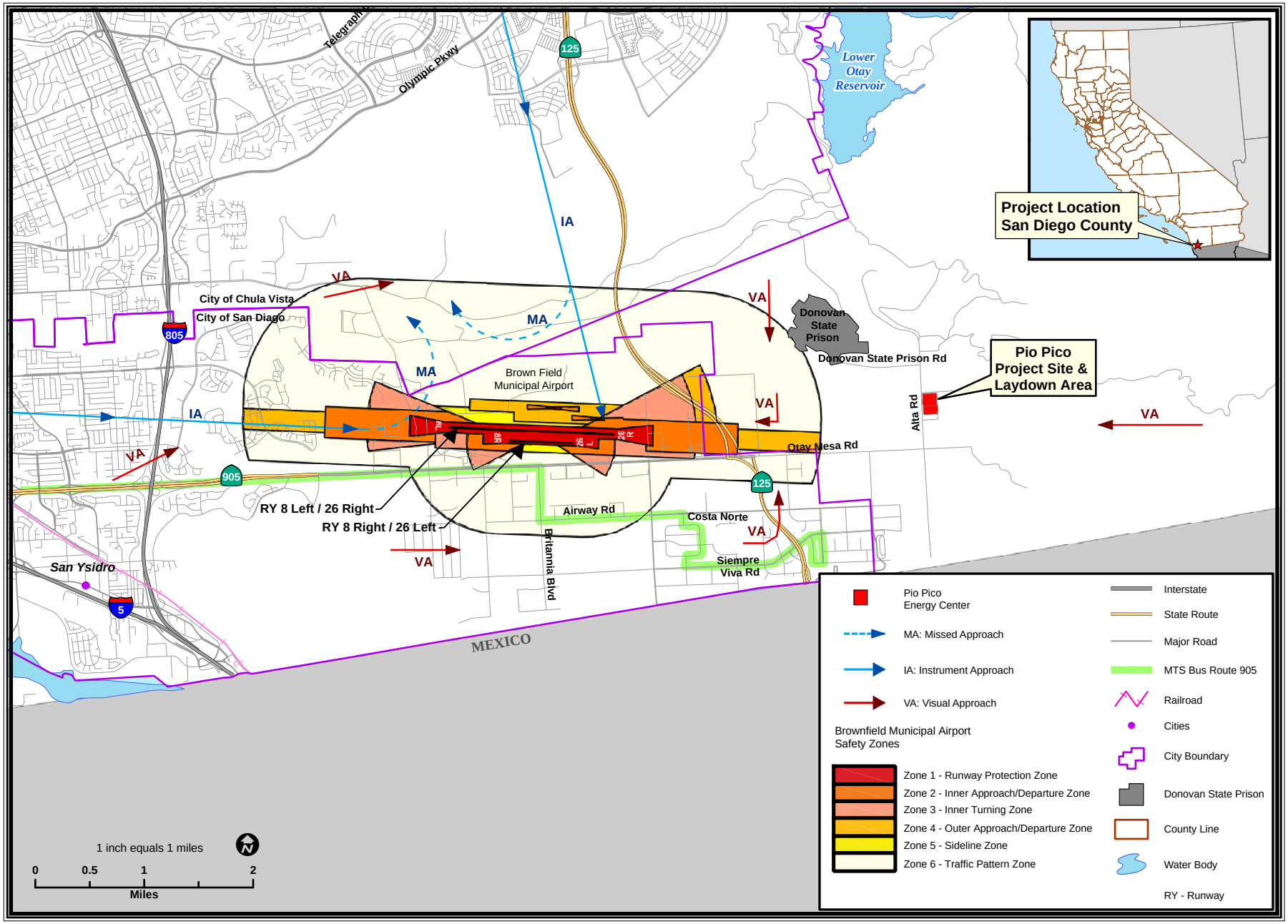
TRAFFIC AND TRANSPORTATION

CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: California Energy Commission, URS Corporation and Multinet

TRAFFIC AND TRANSPORTATION - FIGURE 2

Pio Pico Energy Center - Local Transportation Setting

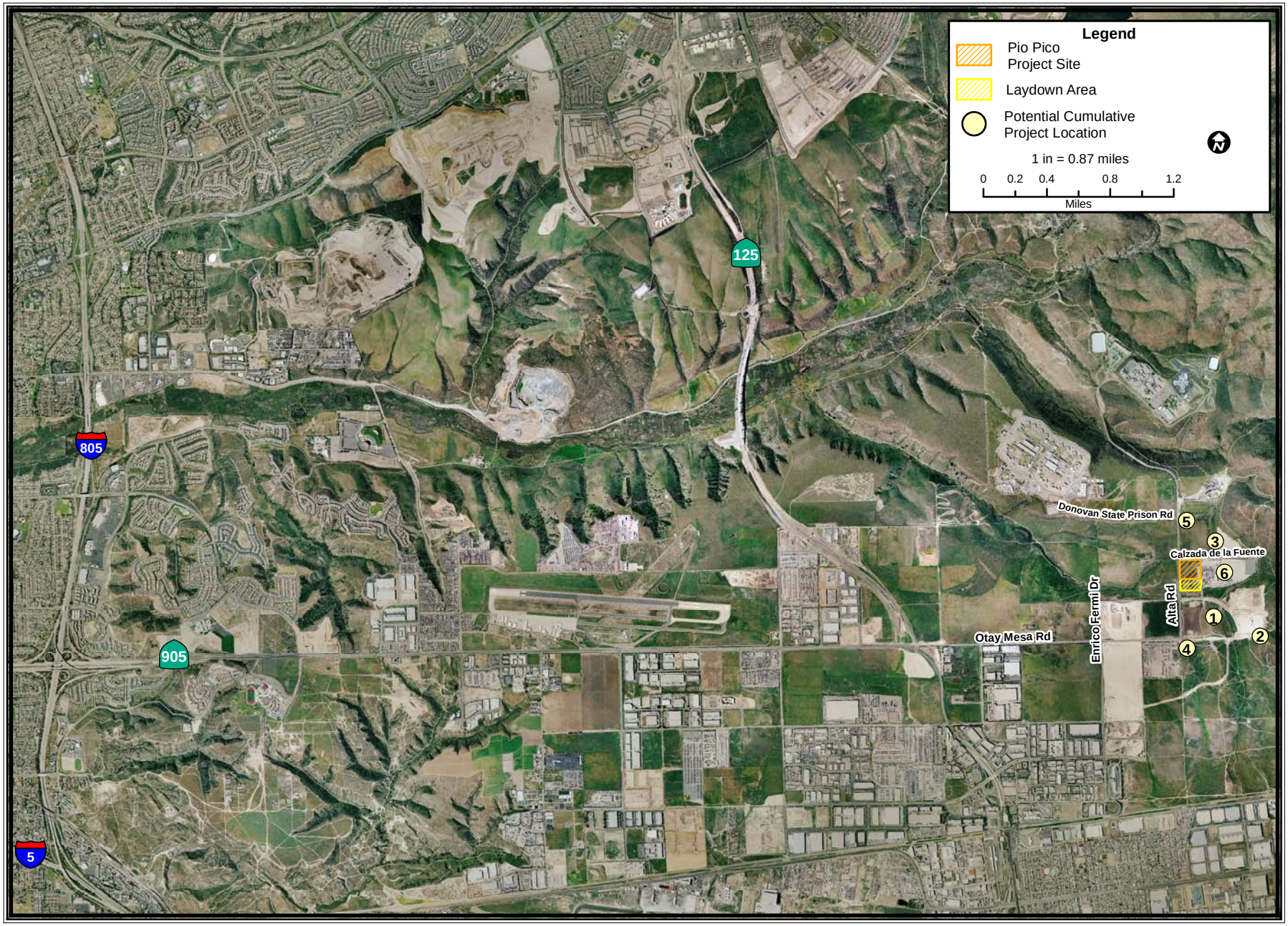


CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: California Energy Commission, San Diego County: Airport Land Use Commission, URS Corporation, Multinet & Metropolitan Transist System (MTS)

TRAFFIC AND TRANSPORTATION - FIGURE 3

Pio Pico Energy Center - Cumulative Impact Projects



CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Digital Globe & URS Corporation.

TRANSMISSION LINE SAFETY AND NUISANCE

Obed Odoemelam, Ph.D.

SUMMARY OF CONCLUSIONS

The California Energy Commission staff concludes that neither of the two candidate transmission lines for the Pio Pico Energy Center would pose an aviation hazard according to the current FAA criteria. In addition, compliance with the requirements outlined in the proposed conditions of certification would minimize the potential for nuisance and hazardous shocks and maintain the generated fields within levels not associated with radio-frequency interference or audible noise. 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 California Public Utilities Commission considers appropriate in light of the available health effects information. Either line would be operated to comply with all federal, state, and local laws, ordinances, regulations, and standards related to transmission line safety and nuisance if staff's recommended conditions of certification are adopted and implemented.

INTRODUCTION

The purpose of this analysis is to assess the proposed Pio Pico Energy Center's (PPEC's) transmission line design and operational plan to determine whether the related field and non-field impacts would constitute a significant environmental hazard in the area around the route. All related health and safety laws, ordinances, regulations, and standards are currently aimed at minimizing such hazards. Staff's analysis focuses on the following issues taking into account both the physical presence of each candidate line and the physical interactions of its electric and magnetic fields:

- aviation safety,
- interference with radio-frequency communication,
- audible noise,
- fire hazards,
- hazardous shocks,
- nuisance shocks, and
- electric and magnetic field (EMF) exposure.

The following federal, state, and local laws and policies apply to the control of the field and nonfield impacts of electric power lines. Staff's analysis examines the project's compliance with these requirements as related to the two candidate lines proposed.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

TRANSMISSION LINE SAFETY AND NUISANCE (TLSN) Table 1

Laws, Ordinances, Regulations, and Standards (LORS)

Applicable LORS	Description
Aviation Safety	
Federal	
Title 14, Part 77 of the Code of Federal Regulations (CFR),"Objects Affecting the Navigable Air Space"	Describes the criteria used to determine the need for a Federal Aviation Administration (FAA) "Notice of Proposed Construction or Alteration" in cases of potential obstruction hazards.
FAA Advisory Circular No. 70/7460-1G, "Proposed Construction and/or Alteration of Objects that May Affect the Navigation Space"	Addresses the need to file the "Notice of Proposed Construction or Alteration" (Form 7640) with the FAA in cases of potential for an obstruction hazard.
FAA Advisory Circular 70/460-1G, "Obstruction Marking and Lighting"	Describes the FAA standards for marking and lighting objects that may pose a navigation hazard as established using the criteria in Title 14, Part 77 of the CFR.
Interference with Radio Frequency Communication	
Federal	
Title 47, CFR, section 15.2524, Federal Communications Commission (FCC)	Prohibits operation of devices that can interfere with radio-frequency communication.
State	
California Public Utilities Commission (CPUC) General Order 52 (GO-52)	Governs the construction and operation of power and communications lines to prevent or mitigate interference.
Audible Noise	
Local	
County of San Diego Noise Ordinances.	Establishes noise standards for the different land uses in the county.
East Otay Mesa Specific Plan (Chapter 3, Land use Regulations).	Establishes exterior noise standards for receptors in East Otay Mesa.
Hazardous and Nuisance Shocks	
State	
CPUC GO-95, "Rules for Overhead Electric Line Construction"	Governs clearance requirements to prevent hazardous shocks, grounding techniques to minimize nuisance shocks, and maintenance and inspection requirements.
CPUC GO 128. Rules for Construction of Underground Electric Supply and Communications Systems.	Applies to the design construction of underground transmission lines. Specifically establishes requirements and minimum standards to be used for the underground installation AC power and communication circuits.

Title 8, California Code of Regulations (CCR) section 2700 et seq. “High Voltage Safety Orders”	Specifies requirements and minimum standards for safely installing, operating, working around, and maintaining electrical installations and equipment.
National Electrical Safety Code	Specifies grounding procedures to limit nuisance shocks. Also specifies minimum conductor ground clearances.
Industry Standards	
Institute of Electrical and Electronics Engineers (IEEE) 1119, “IEEE Guide for Fence Safety Clearances in Electric-Supply Stations”	Specifies the guidelines for grounding-related practices within the right-of-way and substations.
Electric and Magnetic Fields	
State	
CPUC GO-131-D, ”Rules for Planning and Construction of Electric Generation Line and Substation Facilities in California”	Specifies application and noticing requirements for new line construction including EMF reduction.
CPUC Decision 93-11-013	Specifies CPUC requirements for reducing power frequency electric and magnetic fields.
Industry Standards	
American National Standards Institute (ANSI/IEEE) 644-1944 Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields from AC Power Lines	Specifies standard procedures for measuring electric and magnetic fields from an operating electric line.
Fire Hazards	
State	
14 CCR sections 1250–1258, “Fire Prevention Standards for Electric Utilities”	Provides specific exemptions from electric pole and tower firebreak and conductor clearance standards and specifies when and where standards apply.

SETTING

As noted in the **Project Description** section, the proposed PPEC and related transmission line would be located on disturbed and development-prepared land parcel in Otay Mesa, an unincorporated area of San Diego County. The project site is a 10-acre lot in the southeast corner of the Alta Road and Calzada de la Fuente intersection. The generated power would be transmitted to the San Diego Gas and Electric (SDG&E) power grid through the existing 230-kV SDG&E Otay Mesa switchyard located approximately 1,800 feet east of the project site. This power transmission would be made with a 230-kV line to be located within one of two candidate routes identified respectively by the applicant as Route A and Route B (PPEC 2011a, p 5.9-2).

Route A would begin from PPEC’s on-site switchyard and run along the Calzada de la Fuente to its connection point within the Otay Mesa switchyard. The first 1,700 feet would be located overhead while the last 400 feet would be located underground making for a total of 2,100

feet. Route B would begin from the PPEC switchyard and run along the eastern edge of the site, proceeding 550 feet and then turning east for 1,400 feet and finally turning north for approximately 700 feet into the Otay Mesa switchyard. The entire line would be located overhead throughout this 2,650-foot route.

The area around PPEC and the two candidate line routes is zoned for light and heavy industrial uses and habitat conservation. There are a few rural residences the nearest of which are approximately 4,700 feet to the southwest. Either of the proposed routes would allow for an 80-foot right-of-way placing each line away from areas of possible human habitation (PPEC 20119a, pp 3-34). The absence of residences in the immediate vicinity means that there would not be the types of residential field exposure at the root of the health concern of recent years.

PROJECT DESCRIPTION

The Line A alternative would consist of the following segments and structures:

- The 1,700-foot overhead portion stretching from the PPEC on-site switchyard to the point where the remaining 400-foot portion would be undergrounded to the connecting points within the 230-kV SDG&E Otay Mesa switchyard ; and
- Sixty five- and 90-foot steel monopole support structures for the conductors in the overhead section and the underground 230-kV duct bank for the underground section.

The Line B Alternative would consist of the following:

- The 2,650-foot overhead segment stretching from the PPEC on-site switchyard to the connecting point within the Otay Mesa switchyard; and
- The 90-foot support structures for the line's conductors.

Either of the two candidate lines would be owned, operated, and maintained by the applicant according to SDG&E guidelines that ensure line safety, efficiency, reliability and maintainability (PPEC 2011a pp 3-38, 3-48, 5.11-2 and 5.12-16). The applicant has provided the design and structural dimensions of the proposed line structures as related to safety, reliability, and field reduction efficiency (Figures 3.7-1C through 3.7-1D-2).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHODS AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

The potential magnitude of the line impacts of concern in this staff analysis depends on compliance with the listed design-related LORS and industry practices. These LORS and practices have been established to maintain impacts below levels of potential significance. Thus, if staff determines that the project would comply with applicable LORS, we would conclude that any transmission line-related safety and nuisance impacts would be less than significant for either candidate line. The nature of these individual impacts is discussed below together with the potential for compliance with the LORS that apply.

DIRECT IMPACTS AND MITIGATION

Aviation Safety

Any potential hazard to area aircraft would relate to the potential for collision in the navigable airspace. The related requirements in **TLSN Table 1** establish the standards for assessing the potential for obstruction hazards within the navigable space and establish the criteria for determining when to notify the FAA about such hazards. As noted by the applicant (PPEC 2011 a, p. 3-52), these regulations require FAA notification in cases of structures over 200 feet from the ground. Notification is also required if the structure is to be below 200 feet in height but would be located within the restricted airspace in the approaches to public or military airports. For airports with runways longer than 3,200 feet, the restricted space is defined by the FAA as an area extending 20,000 feet (3.98 miles) from the runway, with no obstructing structures for whom the ratio of distance from runway to height is greater than 100:1. For airports with runways of 3,200 feet or less, the restricted airspace would be an area that extends 10,000 feet from this runway. For heliports, the restricted space is an area extending 5,000 feet.

As noted by the applicant, the nearest commercial airport to the PPEC site and either of the two possible lines is Brown Field approximately two miles away and thus too far for any of the lines' identified structures to pose a significant obstruction risk to area aircraft (PPEC 2011, p 3-52). Furthermore, these structures (which are the line supports with a maximum height of 90 feet) would be of a height much below the 200-foot FAA threshold for concern over collision with area aircraft. There are no heliports in the area leading staff to conclude that neither of the two candidate lines would pose an aviation hazard to both area helicopters and fixed-wing aircraft.

Interference with Radio-Frequency Communication

Transmission line-related radio-frequency interference is one of the indirect effects of overhead line operation and is produced by the physical interactions of line electric fields. Since electric fields cannot penetrate the soil and most materials, the discussed electric field effects would not occur in any underground segment. These electric field-related interferences are due to the radio noise produced by the action of the electric fields on the surface of the energized conductor. The process involved is known as "corona discharge," but is referred to as "spark gap electric discharge" when it occurs within gaps between the conductor and insulators or metal fittings. When generated, such noise manifests itself as perceivable interference with radio or television signal reception or interference with other forms of radio communication. Since the level of interference depends on factors such as line voltage, distance from the line to the receiving device, orientation of the antenna, signal level, line configuration, and weather conditions, maximum interference levels are not specified as design criteria for modern overhead 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 and related complaints is therefore minimized by reducing the line electric fields and locating the line away from inhabited areas.

Each of the applicant's candidate lines would be built and maintained according to SDG&E practices that minimize surface irregularities and discontinuities. Moreover, the potential for such corona-related interference is usually of concern for lines of 345 kV and above, and not the 230-kV line proposed. The proposed low-corona designs are used for all SDG&E lines of

similar voltage rating to reduce surface-field strengths and the related potential for corona effects. Moreover, the lines would be located away from area residences making it unlikely that there would be complaints from radio-frequency interference. Staff does not recommend any related condition of certification.

Audible Noise

The noise-reducing designs for low-intensity electric fields are not specifically mandated by federal or state regulations in terms of specific noise limits. As with radio noise, such noise is limited instead through design, construction, or maintenance practices established from industry research and experience as effective without significant impacts on line safety, efficiency, maintainability, and reliability. Audible noise usually results from the action of the electric field at the surface of the line conductor and could be perceived as a characteristic crackling, frying, or hissing sound or hum, especially in wet weather. Since the noise level depends on the strength of the line electric field, the potential for perception around an overhead line can be assessed from estimates of the field strengths expected during operation. Such noise is usually generated during rainfall, but mainly from overhead lines of 345-kV or higher. It is, therefore, not generally expected at significant levels from lines of less than 345-kV as proposed for PPEC. Research by the Electric Power Research Institute (EPRI 1982) has validated this by showing the fair-weather audible noise from modern transmission lines to be generally indistinguishable from background noise at the edge of a right-of-way of 100 feet or more. Since the low-corona designs are also aimed at minimizing field strengths, staff does not expect the proposed line operation to add significantly to current background noise levels in the project area. For an assessment of the noise from the proposed line and related facilities, please refer to staff's analysis in the **Noise and Vibration** section.

Fire Hazards

The fire hazards addressed through the related LORS in **TLSN Table 1** are those that could be caused by sparks from conductors of overhead lines, or that could result from direct contact between the line and nearby trees and other combustible objects.

Standard fire prevention and suppression measures for similar SDG&E lines would be implemented for the chosen line (PPEC 2011a, p 3-39). The applicant's intention to ensure compliance with the clearance-related aspects of GO-95 would be an important part of this mitigation approach. Condition of Certification **TLSN-3** is recommended to ensure compliance with important aspects of the fire prevention measures.

Hazardous Shocks

Hazardous shocks are those that could result from direct or indirect contact between an individual and the energized line, whether overhead or underground. Such shocks are capable of serious physiological harm or death and remain a driving force in the design and operation of transmission and other high-voltage lines.

No design-specific federal regulations have been established to prevent hazardous shocks from overhead or underground power lines. Safety is assured within the industry from compliance with the requirements specifying the minimum national safe operating clearances applicable in areas where the line might be accessible to the public.

The applicant's stated intention to implement the GO-95- and GO-128-related measures against direct contact with the energized line (PPEC 2011a, p. 3-39) would serve to minimize the risk of hazardous shocks for the chosen line as located overhead or underground. Staff's recommended Condition of Certification **TLSN-1** would be adequate to ensure implementation of the necessary mitigation measures.

Nuisance Shocks

Nuisance shocks are caused by current flow at levels generally incapable of causing significant physiological harm. They result mostly from direct contact with metal objects electrically charged by fields from the energized line. Such electric charges are induced in different ways by the line's electric and magnetic fields.

There are no design-specific federal or state regulations to limit nuisance shocks in the transmission line environment. For modern overhead high-voltage lines, such shocks are effectively minimized through grounding procedures specified in the National Electrical Safety Code (NESC) and the joint guidelines of the American National Standards Institute (ANSI) and the Institute of Electrical and Electronics Engineers (IEEE). For the proposed project lines, the project owner will be responsible in all cases for ensuring compliance with these grounding-related practices within the rights-of-way.

The potential for nuisance shocks around the proposed lines would be minimized through standard industry grounding practices (PPEC 2011a, pp. 3-38 and 3-39). Staff recommends Condition of Certification **TLSN-4** to ensure such grounding for PPEC.

Electric and Magnetic Field Exposure

The possibility of deleterious health effects from EMF exposure has increased public concern in recent years about living near high-voltage lines. Both electric and magnetic fields occur together whenever electricity flows and exposure to them together is generally referred to as EMF exposure. The available evidence as evaluated by the CPUC, other regulatory agencies, and staff has not established that such fields pose a significant health hazard to exposed humans. There are no health-based federal regulations or industry codes specifying environmental limits on the strengths of fields from power lines. Most regulatory agencies believe, as staff does, that health-based limits are inappropriate at this time. They also believe that the present knowledge of the issue does not justify any retrofit of existing lines.

Staff considers it important, as does the CPUC, to note that while such a hazard has not been established from the available evidence, the same evidence does not serve as proof of a definite lack of a hazard. Staff, therefore, considers it appropriate in light of present uncertainty, to recommend feasible reduction of such fields without affecting safety, efficiency, reliability, and maintainability.

While there is considerable uncertainty about EMF health effects, the following facts have been established from the available information and have been used to establish existing policies:

- Any exposure-related health risk to the individual will likely be small.
- The most biologically significant types of exposures have not been established.

- Most health concerns are about the magnetic field.
- There are measures that can be employed for field reduction, but they can affect line safety, reliability, efficiency, and maintainability, depending on the type and extent of such measures.

State

In California, the CPUC (which regulates the installation and operation of many high-voltage lines owned and operated by investor-owned utilities) has determined that only no-cost or low-cost measures are presently justified in any effort to reduce power line fields beyond levels existing before the present health concern arose. The CPUC has further determined that such reduction should be made only in connection with new or modified lines. It requires each utility within its jurisdiction to establish EMF-reducing measures and incorporate such measures into the designs for all new or upgraded power lines and related facilities within their respective service areas. The CPUC further established specific limits on the resources to be used in each case for field reduction. Such limitations were intended by the CPUC to apply to the cost of any redesign to reduce field strength or relocation to reduce exposure. Publicly owned utilities, which are not within the jurisdiction of the CPUC, voluntarily comply with these CPUC requirements. This CPUC policy resulted from assessments made to implement CPUC Decision 93-11-013.

In keeping with this CPUC policy, staff requires a showing that each proposed overhead line would be designed according to the EMF-reducing design guidelines applicable to the utility service area involved. These field-reducing measures can impact line operation if applied without appropriate regard for environmental and other local factors bearing on safety, reliability, efficiency, and maintainability. Therefore, it is up to each applicant to ensure that such measures are applied in ways that prevent significant impacts on line operation and safety. The extent of such applications would be reflected by ground-level field strengths as measured during operation and required by staff for all permitted lines. When estimated or measured for lines of similar voltage and current-carrying capacity, such field strength values can be used by staff and other regulatory agencies to assess the effectiveness of the applied reduction measures. These field strengths can be estimated for any given design using established procedures. Estimates are specified for a height of one meter above the ground, in units of kilovolts per meter (kV/m), for the electric field, and milligauss (mG) for the companion magnetic field. Their magnitude depends on line voltage (in the case of electric fields), the geometry of the support structures, degree of cancellation from nearby conductors, distance between conductors and, in the case of magnetic fields, amount of current in the line.

Since most new lines in California are currently required by the CPUC to be designed according to the EMF-reducing guidelines of the electric utility in the service area involved, their fields are required under this CPUC policy to be similar to fields from similar lines in that service area. Designing the proposed project lines according to existing SDG&E field strength-reducing guidelines would constitute compliance with the CPUC requirements for line field management.

The CPUC has recently revisited the EMF management issue to assess the need for policy changes to reflect the available information on possible health impacts. The findings did not point to a need for significant changes to existing field management policies. Since there are

no residences in the immediate vicinity of the proposed project lines, there would not be the long-term residential EMF exposures mostly responsible for the health concern of recent years. The only project-related EMF exposures of potential significance are the short-term exposures of plant workers, regulatory inspectors, maintenance personnel, visitors, or individuals in the vicinity of the lines. These types of exposures are short term and well understood as not significantly related to the health concern.

Industry's Approach to Reducing Field Exposures

The present focus is on the magnetic field because unlike electric fields, it can penetrate the soil, buildings, and other materials to produce the types of human exposures at the root of the health concern of recent years. The industry seeks to reduce exposure, not by setting specific exposure limits, but through design guidelines that minimize exposure in each given case. As one focuses on the strong magnetic fields from the more visible high-voltage power lines, staff considers it important, for perspective, to note that an individual in a home could be exposed to much stronger fields while using some common household appliances than from high-voltage lines (National Institute of Environmental Health Services and the U.S. Department of Energy, 1998). The difference between these types of field exposures is that the higher-level, appliance-related exposures are short-term, while the exposure from power lines is lower level, but long term. Scientists have not established which of these types of exposures would be more biologically meaningful in the individual. Staff notes such exposure differences only to show that high-level magnetic field exposures regularly occur in areas other than around high-voltage power lines.

As with similar SDG&E lines, specific field strength-reducing measures would be incorporated into the proposed lines to ensure the field strength minimization currently required by the CPUC in light of the concern over EMF exposure and health.

The field reduction measures to be applied for any overhead segments include the following:

1. Increasing the distance between the conductors and the ground to an optimal level;
2. Reducing the spacing between the conductors to an optimal level;
3. Minimizing the current in the line; and
4. Arranging current flow to maximize the cancellation effects from interacting of conductor fields.

The strengths of the line fields along the two candidate routes would depend on the effectiveness of the field-reducing measures incorporated into their designs for the overhead segment. These fields should be of the same intensity as SDG&E lines of the same construction, voltage and current-carrying capacity. The requirements in Condition of Certification **TLSN-2** for field strength measurements are intended to validate the applicant's assumed minimization efficiency for the overhead line. For the underground segment, undergrounding by itself would yield the magnetic fields of the lowest intensity possible (without affecting safety, reliability, and efficiency) since undergrounding allows for the closest conductor spacing and field strength cancellation possible). The only related requirements for this project would be for undergrounding according to requirements of CPUC's GO-128, and compliance with standard industry and SDG&E standards and practices. Only the magnetic

field would be involved since only they can penetrate the soil and most materials to reach the area above the line.

CUMULATIVE IMPACTS AND MITIGATION

When field intensities are measured or calculated for a specific location, they reflect the interactive, and therefore, cumulative effects of fields from all contributing conductors. This interaction could be additive or subtractive depending on prevailing conditions. Since either of the proposed candidate project transmission lines would be designed and erected according to applicable field-reducing SDG&E guidelines as currently required by the CPUC for effective field management, any contribution to cumulative area exposures should be at levels expected for SDG&E lines of similar voltage and current-carrying capacity. It is this similarity in intensity that constitutes compliance with current CPUC requirements on EMF management. The actual field strengths and contribution levels for the chosen line 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 CPUC policy on safe EMF management requires that any high-voltage line within a given area be designed to incorporate the field strength-reducing guidelines of the main area utility lines to be interconnected. The utility in this case is SDG&E. Since each of the proposed lines would be designed according to the respective requirements of the LORS listed in **Table 1**, and operated and maintained according to current SDG&E guidelines on line safety and field strength management, staff considers the proposed design and operational plan to be in compliance with the health and safety requirements of concern in this analysis. The actual contribution to the area's field exposure levels would be assessed from results of the field strength measurements required in Condition of Certification **TLSN-2**.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Staff received no public or agency comments on the transmission line nuisance and safety aspects of the proposed MEP.

CONCLUSIONS

Staff does not expect either of the two candidate PPEC transmission lines to pose an aviation hazard according to current FAA criteria, and therefore, does not consider it necessary to recommend location changes on the basis of a potential hazard to area aviation.

The potential for nuisance shocks would be minimized through grounding and other field-reducing measures to be implemented in keeping with current SDG&E guidelines (reflecting standard industry practices). These field-reducing measures would maintain the generated fields within levels not associated with radio-frequency interference or audible noise.
The potential for hazardous shocks would be minimized through compliance with the height and clearance requirements of PUC's General Order 95 and General Order 128 in the case of the underground section. Compliance with Title 14, California Code of Regulations, section

1250, would minimize fire hazards, while the use of low-corona line designs, 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 PPEC and similar transmission lines, the public health significance of any related field exposures cannot be characterized with certainty. The only conclusion to be reached with certainty is that the proposed line design and operational plan would be adequate to ensure that the generated electric and magnetic fields are managed to an extent the CPUC considers appropriate in light of the available health effects information. The long-term, mostly residential magnetic exposure of health concern in recent years would be insignificant for the proposed lines given the general absence of residences along the proposed route. On-site worker or public exposure would be short term and at levels expected for SDG&E lines of similar design and current-carrying capacity. Such exposure is well understood and has not been established as posing a significant human health hazard.

Since both of the candidate project lines would be operated to minimize the health, safety, and nuisance impacts of concern to staff and would be located away from areas of human habitation, staff considers the proposed design, maintenance, and construction plan as complying with the applicable laws for either line. With the conditions of certification proposed below, any such impacts would be less than significant for the chosen alternative.

PROPOSED CONDITIONS OF CERTIFICATION

TLSN-1 The project owner shall construct the chosen 230-kV transmission line according to the requirements of California Public Utility Commission's GO-95, GO-52, GO-131-D, Title 8, and Group 2, High Voltage Electrical Safety Orders, sections 2700 through 2974 of the California Code of Regulations, GO-128 (in the case of any underground segment), and SDG&E's EMF-reduction guidelines.

Verification: At least 30 days before starting the upgrade of the transmission line or related structures and facilities, the project owner shall submit to the Compliance Project Manager (CPM) a letter signed by a California registered electrical engineer affirming that the lines will be constructed according to the requirements stated in the condition.

TLSN-2 The project owner shall use a qualified individual to measure the strengths of the electric and magnetic fields from the chosen line at the points of maximum intensity along its route. The measurements shall be made after energization according to the American National Standard Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) standard procedures. These measurements shall be completed not later than six months after the start of operations.

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

TLSN-3 The project owner shall ensure that the rights-of-way of the proposed transmission lines are kept free of combustible material, as required under the provisions of

section 4292 of the Public Resources Code and section 1250 of Title 14 of the California Code of Regulations.

Verification: During the first five years of plant operation, the project owner shall provide a summary of inspection results and any fire prevention activities carried out along the right-of-way of each line and provide such summaries in the Annual Compliance Report.

TLSN-4 The project owner shall ensure that all permanent metallic objects within the right-of-way of each of the chosen project line 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 Services 1998. An Assessment of the Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields. A Working Group Report, August 1998.

PPEC (Pio Pico Energy Center LLC) 2011a. Application for Certification for the Pio Pico Energy Center. Submitted to the California Energy Commission 0n 2-9-2011. .

VISUAL RESOURCES

Melissa Mourkas, ASLA

SUMMARY OF CONCLUSIONS

Staff concludes that with mitigation, the construction and operation of the Pio Pico Energy Center (PPEC) will not cause significant visual impacts according to the California Environmental Quality Act (CEQA) Guidelines. As conditioned, the PPEC would comply with all applicable laws, ordinances, regulations, and standards (LORS) as they pertain to visual resources.

INTRODUCTION

Visual resources consist of the viewable natural and built features of the environment. In this section staff evaluates the impacts on visual resources resulting from the construction and operation of the PPEC. Staff bases its evaluation on information contained in the California Environmental Quality Act (CEQA) Guidelines, Aesthetics, to determine if the project would:

1. Cause a significant impact under CEQA.

2. Comply with applicable federal, state, and local LORS pertaining to aesthetics and preservation and protection of sensitive visual resources.

REGIONAL SETTING

The project site is located in San Diego County near the western base of the San Ysidro Mountains, approximately 1.5 miles north of the U.S./Mexico border, and approximately 15 miles southeast of the City of San Diego. On the Mexico side of the international border, the City of Tijuana has extensive urban residential and commercial development along the border. A 12 to15-foot (approximately) solid steel fence separates the two countries at the border. Other than three single-family residences on Otay Mesa Road, the nearest residential community to the PPEC site is within the Otay Ranch area, located within the city limits of Chula Vista and is approximately 4.5 miles northwest of the power plant site. The plant facilities would not be within a line of sight from this subdivision because of intervening hills. From the power plant south to the international border, there are no residential areas. The undulating topography within the 5-mile radius Visual Sphere of Influence (VSOI) generally impedes views of the project site beyond the immediate vicinity.

The Bureau of Land Management (BLM) Otay Mountain Wilderness area is located approximately 1.5 miles east of the project site. The wilderness area offers recreation opportunities such as distributed camping, hiking, hunting, fishing, birding and horseback riding. This area is under regular patrol by the U.S. Border Patrol Officers due to close proximity to the border. The San Ysidro Mountains and the Otay Mountain Wilderness area are characterized by chaparral landscapes. Otay Mountain is located approximately 4.5 miles from the project site.

PROJECT SITE

The project site would encompass approximately 9.99 acres on the eastern portion of the Otay Mesa in southwestern San Diego County. The property is immediately adjacent to Alta Road on the east side, and Calzada de la Fuente to the north. It is 1,500 feet north of Otay Mesa Road. The existing Otay Mesa Generating Project (OMGP) natural gas-fired power plant is immediately adjacent east of the project site. Some street improvements (i.e., curb, gutter, sidewalks) have been installed along Alta Road, Paseo de la Fuente and Calzada de la Fuente. Overhead transmission lines and streetlights traverse along the east side of Alta Road past the project site. In addition, streetlights and transmission poles and lines are in place along Calzada de la Fuente. Paseo de la Fuente has complete landscape improvements; some landscape plantings have been installed along a portion of Calzada de la Fuente, including street trees and a recreational trail on the north side of the street.

Prior to site grading permitted by the County of San Diego and completed in 2011, the site consisted of gently rolling terrain, sloping from approximately 660 feet above sea level (ASL) at the eastern property line to 630 feet ASL at the west property line. The site was undeveloped and consisted primarily of fallow agricultural land. Current land uses in the site vicinity include the OMGP power plant, fallow agricultural land, three correctional facilities approximately one mile northwest, and at least one business located at the former Kuebler Ranch, approximately one-half mile northwest of the plant site. An industrialized area is located southwest of the project site following the Otay Mesa Road corridor.

The post-grading project site has a steep slope with a drop in elevation from 660 feet to 636 feet midpoint along the slope on the east side of the property. The conceptual landscape plan submitted in response to staff data request (Figure 6) indicates this slope at 2:1 (Horizontal Run:Vertical Rise). The grading plan (Figure 3.4-2, Baseline Site Topography, PPEC 2011a) shows that the ground surface from the base of the slope generally falls at a 1% slope toward the northwest corner retention basin. Both the proposed project site and the adjacent construction laydown area have been graded for improvements and are devoid of vegetation.

Visual Resources Table 1 provides the proposed project's approximate dimensions, colors, materials, and finishes for major buildings and structures. An AFC Refinement submitted by the applicant (PPEC 2011s) includes the addition of a Final Wastewater Storage Tank and enlarges the footprint of the Water Treatment Building by 9,200 square feet. These modifications to the original project do not pose a significant change to the visual impact of the project and therefore are not further addressed by staff in this section.

VISUAL RESOURCES Table 1
Proposed PPEC Project's Dimensions, Colors, Materials and Finishes
Of Major Buildings and Structures

Element	Height (ft)	Length (ft)	Width (ft)	Diameter (ft)	Color	Materials
CTG Exhaust Stacks (3)	100	---	---	14.5	Grey	Steel
Intercooler Heat Exchangers (3)	13.5	44	15	---	Grey	Steel
Combustion Turbine Generators (3)	40	130	30	---	Grey	Steel
Variable Bleed Vents w/ Silencers (3)	53	---	12	---	Grey	Steel
Hot Selective Catalytic Reduction (SCR)	35	70	25	---	Grey	Steel
Dry-Cooling Components (9)	15	47	14	---	Grey	Galvanized steel
Raw Water Storage Tank	30-32	---	---	54	Grey	Steel
Demineralized Water Storage Tank	30	---	---	38	Grey	Steel
Process Wastewater Collection Tank	24	---	---	26	Grey	Steel
Final Wastewater Storage Tank	30	---	---	11	Not provided	Not provided
Gas Compressor Enclosures (3)	15	50	17	---	Grey	Steel
Wet Cooling Components (12)	22	26	14	N/A	Grey	Galvanized steel
Water Treatment Building	Not provided	Not provided	Not provided	Not provided	Not provided	Not provided
Control Room/Warehouse	Not provided	Not provided	Not provided	Not provided	Not provided	Not provided

Wastewater Tank	Not provided	Not provided	Not provided	Not provided	Not provided	Not provided
SKV Electrical Module	Not provided	Not provided	Not provided	Not provided	Not provided	Not provided
Fire Water Pump Building	Not provided	Not provided	Not provided	Not provided	Not provided	Not provided
Transmission Line Steel Poles (5)	90	---	---	---	Grey	Galvanized steel

Source: PPEC 2011a, Table 5.13-4, Figure 3.1-3A, PPEC 2011s, Table 3.5-1

Transmission Line(s)

Two alternative routes are proposed to connect the project to the existing Otay Mesa 230kV switchyard located approximately 2000 feet east of the proposed project site. Route A is proposed to begin as an overhead power line on the north edge of the project site proceeding in an easterly direction along Calzada de la Fuente. It would extend overhead for approximately 1700 feet to the east, then be routed underground for approximately 400 feet to the switchyard connection. Route B would begin as an overhead power line from the eastern edge of the project site, run south approximately 550 feet, turn east and run approximately 1400 feet and turn north for the final 700 feet to connect with the existing switchyard. Staff notes that just prior to completion of this Preliminary Staff Assessment section (PSA), the applicant submitted a draft revision to Route B based upon potential impacts to both Biological and Cultural Resources. This route would follow along the wall of the existing OMGP and dimensions are not known at this time[1]. The applicant expects to provide this information after review of the PSA.

Natural Gas Pipeline

There are two proposed routes for the gas supply line. Routes A and B would each connect to an existing San Diego Gas & Electric (SDG&E) pipeline. The existing pipelines are two different locations. The proposed gas line Route A has been modified from the original proposed in the AFC. Modified Gas Line Route A[2] would travel southbound under Alta Road to Otay Mesa Road, where it would turn to the west to San Bernardino Road. At San Bernardino Road it would turn southbound and connect to an existing underground pipeline. The total length of Route A is projected to be 7,775 feet. Proposed Gas Line B would also travel southbound under Alta Road, turn west on Otay Mesa Road and continue to Harvest Road. Route B is approximately 10,300 feet in length.

[1] Pio Pico Energy Center, Supplemental Responses to Biological Resources Data Requests, docketed November 28, 2011.

[2] PPEC 2011h, 6/8/2011

Water Supply and Discharge

The initial connection for water supply would be to one of two potable water service mains, either at an existing 12 inch main along Calzada de la Fuente or an existing 24 inch main along Alta Road. For water discharge, a connection would be made from the on-site detention basin to an existing 30 inch stormwater pipeline, located adjacent to the site along Calzada de la Fuente. The construction laydown parcel has a similar configuration, with a connection from the detention basin in the southwest corner to an existing main along Paseo de la Fuente. These connections are shown in the AFC Figure 3.4-2, Baseline Site Topography.

Construction Laydown and Staging Area

The temporary construction laydown area is a 6-acre parcel bounded by Alta Road, Paseo de la Fuente and the proposed project site, located immediately to the south of the PPEC site. Like the project site, it has been cleared and graded for post-project development. It has a fairly steep slope along the eastern boundary and gradually slopes at 1 percent pitch to the detention pond in the southwest corner. According to AFC Figure 3.4-2, there would be access from both Alta Road and De la Fuente Court, a cul-de-sac off Paseo de la Fuente. The project site and laydown area have been graded to present a uniform appearance along Alta Road. Construction trailers, storage and parking would be visible from Alta Road and Paseo de la Fuente Road. Due to its somewhat elevated position relative to the Alta Road roadbed, the visibility would be reduced from the motorist perspective. The laydown site is expected to be in use for 18 months.

APPLICANT PROPOSED MITIGATION MEASURES AND CONDITIONS OF CERTIFICATION

The applicant's discussion of the impacts of the PPEC is found in Section 5.13.4, pages 5.13-26 to 27 in the Application for Certification (AFC). The applicant finds that "PPEC includes features that reduce visual impacts from the construction and operation of the facility." It is not specified what those features are. The applicant also finds that the "location of the project inherently provides mitigation based upon the visual character of the immediate viewshed." By this, the reader can only assume that statement to mean its proposed location next to the existing power generating plant, OMGP. The applicant then proposes the following visual resources mitigation measures and proposed conditions of certification "to further reduce visual impacts to less-than-significant levels":

Visual Resources -1: The project owner shall prepare a Lighting Plan for Compliance project Manager (CPM) and CEC visual resources staff review and approval. The Lighting Plan shall include the following components:

- External lighting shall incorporate commercially available fixture hoods and shielding that direct light downward or toward the area to be illuminated.
- Light fixtures shall not cause obtrusive spill beyond the project boundary.
- All lighting shall be of minimum necessary brightness consistent with operational safety and security.

- Direct lighting shall not illuminate the nighttime sky.

***Verification**:* The project owner shall submit the proposed Lighting Plan to the CPM for review and approval at least 60 days prior to ground disturbance.

Visual Resources -2: To reduce potential glint/glare from PPEC, the project owner shall use non-reflective or matted steel and metal for project structures and components.

Verification: The project owner shall prepare and submit a surface treatment plan to the CPM prior to project ground disturbance showing that the project design uses non-reflective or matted steel or metal where feasible and note any instances where such metals or steel are not planned to be used for structures and components.

With implementation of Mitigation Measures Visual Resources -1 and -2, the applicant finds that the "project's less than significant impacts may be even further reduced."

A Supplemental Response submitted to the Energy Commission on September 13, 2011 (PPEC 2011p), indicated the applicant agrees with staff that the color palette for the project structures should be compatible with the existing OMGP's colors. The applicant proposed the following Condition of Certification:

Visual Resources-3: Prior to construction, the project owner shall identify the PPEC project structures and components that would be painted in natural and neutral shades. The selected color(s) shall be compatible with the project surroundings, and are subject to CEC visual resources staff approval.

Verification: The project owner shall submit the list of PPEC structures and components with the proposed architectural coating palette to the CPM for review and approval at least 60 days prior to ground disturbance.

The applicant discusses Laws, Ordinances, Regulations and Standards (LORS) in Section 5.13.5 of the AFC. On page 5.13-27, the applicant discusses the project's compliance with the County of San Diego's Otay Mesa Specific Plan. The applicant finds, that "in order to comply with the Plan, PPEC would need to incorporate the landscaping development standards from the Plan into the project design." In addition, the applicant finds that "the development and implementation of a landscaping plan is not expected to reduce impacts to visual resources, rather landscaping is being proposed in order to comply with all LORS and is not required for mitigation under CEQA." The applicant submitted a Conceptual Landscape Plan, Figure 6, as a response to a data request from staff. Staff refers to that plan in the staff-recommended Condition of Certification **VIS-2**.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Staff evaluates the project to determine compliance with federal, state and local laws, ordinances, regulations and standards. Federal and state laws reviewed generally fall under scenic by-way and highway designations. No National Scenic By-Ways or State Scenic Highways are located within the project vicinity; therefore there is no discussion of these laws in this section.

California *Government Code*, Section 65300, requires each city and county in California to adopt a general plan for the physical development of the county or city and any land outside its boundaries that bears relation to its planning. On the basis of these general plans, cities and counties establish policies and strategies necessary to carry out elements of the plan.

San Diego County has adopted a general plan, most recently updated August 3, 2011. The project site would also be located within the Otay Mesa Specific Plan area and subject to its regulations. The Otay Mesa Specific Plan implements the General Plan policies for the project area and contains regulations for development projects within the Plan's boundaries. **Visual Resources Table 2** lists the local laws, ordinances, regulations, and standards (LORS) as they pertain to the PPEC

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Visual Resources Table 2 includes information about relevant local laws, ordinances, regulations, and standards (LORS) pertaining to aesthetics or the preservation and protection of sensitive visual resources.

VISUAL RESOURCES Table 2
Applicable Laws, Ordinances, Regulations, and Standards

Source	Policy and Strategy Description
County of San Diego General Plan Update August 3, 2011 Chapter 2: Land Use Element Goal LU-11, Policy LU-11.2 Compatibility with Community Character.	Require that commercial, office, and industrial development be located, scaled, and designed to be compatible with, respect and enhance the unique character of the community.
County of San Diego General Plan Update August 3, 2011 Chapter 2: Land Use Element Goal LU-11, LU-11.11 Industrial Compatibility with Adjoining Uses.	Require industrial land uses with outdoor activities or storage to provide a buffer from adjacent incompatible land uses (refer to Policy LU-11.9 for examples of buffering).
County of San Diego General Plan Update August 3, 2011 Chapter 4: Conservation and Open Space Element GOAL COS-4 Water Management, COS-4.2 Drought-Efficient Landscaping.	Require efficient irrigation systems and in new development encourage the use of native plant species and non-invasive drought tolerant/low water use plants in landscaping.
County of San Diego General Plan Update August 3, 2011 Chapter 4: Conservation and Open Space Element GOAL COS-11, Policy COS-11.1, Protection of Scenic Resources	Require the protection of scenic highways, corridors, regionally significant scenic vistas, and natural features, including prominent ridgelines, dominant landforms, reservoirs, and scenic landscapes.
County of San Diego General Plan Update August 3, 2011 Chapter 4: Conservation and Open Space Element GOAL COS-11, Policy-11.2 Scenic Resource Connections	Promote the connection of regionally significant natural features, designated historic landmarks, and points of regional historic, visual, and cultural interest via designated scenic corridors, such as scenic highways and regional trails.

County of San Diego General Plan Update August 3, 2011 Chapter 4: Conservation and Open Space Element GOAL COS-11, Policy-11.5 Collaboration with Private and Public Agencies.	Coordinate with the California Public Utilities Commission, power companies, and other public agencies to avoid siting energy generation, transmission facilities, and other public improvements in locations that impact visually sensitive areas, whenever feasible. Require the design of public improvements within visually sensitive areas to blend into the landscape.
County of San Diego General Plan Update August 3, 2011 Chapter 4: Conservation and Open Space Element GOAL COS-11, Policy-11.7 Underground Utilities	Require new development to place utilities underground and encourage “undergrounding” in existing development to maintain viewsheds, reduce hazards associated with hanging lines and utility poles, and to keep pace with current and future technologies.
San Diego County Code of Regulatory Ordinances, Section 51.201-209, Light Pollution Code (LPC), adopted by Ordinance 9974, 4-3-09 (Dark Sky Ordinance)	LPC regulates outdoor lighting in Zones A and B, which are based on distance from the Palomar and Mount Laguna Observatories. The project is located in Zone B, which is more than 15 miles from Palomar and Mount Laguna Observatories.
San Diego County Zoning Ordinance Performance Standards Part 6 General Regulations 6322 Outdoor Lighting, 6324 Lighting Permitted in Required Yards, 6326 Lighting Not in Required Yards	Regulates lighting types, hours of operation, light trespass and requires compliance with the Dark Skies Ordinance.
County of San Diego Guidelines for Determining Significance and Report Format and Content Requirements, Dark Skies and Glare, Modified January 15, 2009.	Section 4.0 Provides guidelines for determining significance of impacts from a project’s proposed lighting.
County of San Diego, Water Conservation in Landscaping Ordinance, Title 8, Division 6, Chapter 7 of the San Diego County Code.	A landscape documentation package must be submitted with a building permit application for an industrial use where the landscaped area is 1000 square feet or more that meets the code’s requirements.
San Diego County, East Otay Mesa Specific Plan, Urban Design Element, Chapter Two-Plan Elements, Master Streetscape Plan	Alta Road is identified as a collector road requiring trees planted every 25 feet and 10 feet from the face of the curb. A 2-1/2- foot planter shall separate the roadway from the sidewalks with shrubs spaced every 3 feet on center.

San Diego County, East Otay Mesa Specific Plan, Regulatory Provisions, Table 3.2-1 Site Planning Standards	• Public Utility Structures: shall be located underground or appropriately screened; • Fences: Within the setback area, a fence, wall, hedge or other barrier shall have a maximum height of 6 feet. Noise walls may be higher. Beyond the setback area, fences are permitted up to the maximum height applicable to the main building. Goal is to create industrial and business parks with a strong identity and cohesive, visually unified character. The specific plan allows any durable material. Chain link is generally excluded but is permitted in interior lot locations in Heavy Industrial or Mixed Industrial where the fence is located outside the setback from the public right-of-way. • Lighting must comply with Light Pollution Code (51.201-209) and have directional shields; wall-packs are permitted with cut-off luminaries.
San Diego County, East Otay Mesa Specific Plan, Regulatory Provisions, Table 3.2-2 Landscaping Standards	Landscape plans for all development in East Otay Mesa shall be submitted and approved pursuant to Sections 86.701-86.729 of the San Diego County Code. Requirements are identified for the following: • General Landscaping Notes • Streetscapes • Building Setback Landscaping • Parking Lot Landscaping • Screening • Minimum Standards (including slopes) • Irrigation

ASSESSMENTS OF IMPACTS AND DISCUSSION OF MITIGATION

This section includes information about the following:

1. Method and threshold for determining significance
2. Direct/indirect/induced impacts and mitigation
3. Cumulative impacts and mitigation

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

To determine whether there is a potentially significant visual resources impact caused by a project, Energy Commission staff reviews the project using the 2011CEQA Guidelines, Appendix G Environmental Checklist, pertaining to “Aesthetics.” The checklist questions include the following:

A. Would the project have a substantial adverse effect on a scenic vista?

B. Would the project substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?

C. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

D. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Staff evaluates both the existing visible physical environmental setting, and the anticipated visual change introduced by the proposed project to the view, from representative, fixed vantage points known as "Key Observation Points" (KOPs). KOPs are selected to be representative of the most characteristic and critical viewing groups and locations from which the project would be seen. The likelihood of a visual impact exceeding Criterion C of the CEQA Guidelines, above, is determined in this study by two fundamental factors: the susceptibility of the setting to impact as a result of its existing characteristics (reflected in its current level of visual quality, the potential visibility of the project, and the sensitivity to scenic values of its viewers); and the degree of visual change anticipated as a result of the project. These two factors are summarized respectively as *visual sensitivity* (of the setting), and *visual change* (due to the project). Briefly, KOPs with high sensitivity (due to environmental Checklist pertaining to "Aesthetics", outstanding scenic quality, high levels of viewer concern, etc.), that experience high levels of visual change from a project, are more likely to experience adverse impacts. KOPs with low sensitivity or low levels of visual change are less likely to experience adverse impacts. **Visual Resources Appendix VR-1** provides information about the process used to evaluate each KOP. Staff's analysis of the project's effect on each KOP is presented under Operation Impacts and Mitigation section of this analysis.

Visual Resources Figure 1 shows the locations of the four KOPs used in this analysis:

- KOP 1 – View from Otay Mountain Truck Trail, located in the Otay Mountain Wilderness Area
- KOP 2 – View from Proposed Otay Valley Regional Park Expansion
- KOP 3 – View from Kuebler Ranch and Restaurant
- KOP 4 – View from northbound lanes of Alta Road at Paseo de la Fuente

The four KOPs were selected to represent the overall project viewshed or area of potential visual effect (the area within which the project could potentially be seen).

Staff also reviews applicable federal, state, and local LORS and their policies or guidelines for aesthetics or preservation and protection of sensitive visual resources that may be applicable to the project site and surrounding area. These LORS include local government land use planning documents (e.g., General Plan, zoning ordinance).

See **Visual Resources Table 2** for applicable LORS and **Table 5** for the project's consistency with applicable LORS.

Direct/Indirect Impacts and Mitigation

Information about direct and indirect impacts and proposed mitigation is included in this section and grouped according to the questions found in the CEQA Environmental Checklist, A through D below.

A. SCENIC VISTA

"Would the project have a substantial adverse effect on a scenic vista?"

For the purposes of this analysis, a *scenic vista* is defined as a distant view of high pictorial quality perceived through and along a corridor or opening. Staff has conducted site visits to the project area and researched national, state and local scenic vista designations in the vicinity of the project area. No scenic vistas exist in the KOP 1, KOP 2, KOP 3 and KOP 4 viewsheds.

B. SCENIC RESOURCES

"Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway corridor?"

For the purpose of this analysis, *scenic resources* include a unique water feature (waterfall, transitional water, part of a stream or river, estuary); a unique physical geological terrain feature (rock masses, outcroppings, layers or spires); a tree having a unique/historical importance to a community (a tree linked to a famous event or person, an ancient, old growth tree); historic building; or other scenically important physical features, particularly if located within a designated federal scenic byway or state scenic corridor. Staff has conducted site visits to the project area and researched national, state and local scenic resource designations in the vicinity of the project area. No scenic resources exist in the KOP 1, KOP 2, KOP 3 and KOP 4 viewsheds.

C. VISUAL CHARACTER OR QUALITY

"Would the project substantially degrade the existing visual character or quality of the site and its surroundings?"

The visual aspects evaluated according to this criterion are organized into two categories: 1) construction impacts and 2) operational impacts.

1. Construction Impacts and Mitigation

Information about construction impacts are organized according to project site and construction laydown and parking area and linear routes.

Project Site and Construction Laydown Area

Construction activities at the project site and construction laydown area would not substantially degrade the visual character or quality of the sites and surrounding areas as viewed from KOPs 1-3. Viewers at these KOPs are infrequent, visual sensitivity

ranges from low to moderate and the visual impacts from construction activities and lighting would be less than significant, especially considering the location adjacent to the OMGP, with its own nighttime lighting in place and the distance from the KOPs. The construction activity would be highly visible from KOP 4, representative of the motorists travelling northbound on Alta Road.,.. Construction activity, including movement of large vehicles and storage of materials, would be highly visible from Alta Road and therefore a potential distraction for drivers. In addition nighttime construction lighting and security lighting would have the potential to produce glare or off-site light trespass. This has the potential to cause distraction in the form of glare and confusion as to the light source origin for motorists on Alta Road. Without screening and lighting controls, the impact upon motorists on Alta Road would be adverse and significant. Screen fencing and lighting controls as conditioned in Conditions of Certification **VIS-4** and **VIS-5** would limit visibility of the construction site and the potential for glare and light trespass during construction. Visual impacts of construction activity would be less than significant for the motorists on Alta Road, as represented in KOP 4, when conditioned by Conditions of Certification **VIS-4** and **VIS-5**.

Linears

Gas pipeline construction would occur within the right of way of several local roads. While there would be temporary disruption of traffic patterns and the clutter of construction-related equipment and signs, these impacts would be temporary and ephemeral. Due to their temporary nature, there would be no significant adverse impacts from construction of the pipelines.

Transmission line and poles would be installed following proposed Route A or B to connect to the existing switching station east of the project site. For either proposed route, there would be temporary visual impacts of staged construction materials, equipment and excavation. Due to the extremely low number of viewers in the affected areas, staff anticipates that no significant adverse visual impacts would occur during construction of the transmission line. Staff notes that if a revised Route B is chosen (see Footnote 1), there would exist the potential for major disruption of the existing screening landscape trees and plantings within the OMGP property landscape setback and along the existing block wall. Condition of Certification **VIS-2** would remedy this disturbance by requiring the project owner to repair and or replace the existing landscape elements (trees, shrubs, groundcover and other structures such as fences and walls) in conformance with the OMGP original Conditions of Certification and the current LORS.

Light or Glare

During construction, the proposed project has the potential to introduce light offsite to surrounding properties, and up-lighting to the nighttime sky. If bright exterior lights were not shielded or directed onsite, they could introduce significant light or glare to the vicinity, particularly for motorists on Alta Road, as represented by KOP 4, Project construction would occur for up to 16 months. Some construction activities may take place 24 hours a day, 7 days a week, if they are not otherwise restricted. With adequate screening and shielding, proposed construction lighting would remain subordinate to the surrounding area. Staff recommends Conditions of Certification **VIS-4** to provide visual screening and **VIS-5** to ensure full compliance and verification of night lighting

measures during the construction phase to reduce the potential effects on motorists on Alta Road..

Conclusion

Overall, staff concludes that the project's proposed construction activities as described above would not substantially degrade the existing visual character or quality of the site and its surroundings with the adoption of the conditions of certification noted herein. Staff has reviewed **Socioeconomics Figure 1**, which shows the environmental justice population is greater than 50% within a six-mile radius of the proposed PPEC. Energy Commission staff has not identified any significant adverse direct or indirect visual resources impacts resulting from the construction of the project. Therefore, there are no visual resources environmental justice issues related to the construction of this project and no minority or low-income populations would be significantly or adversely impacted.

2. Operational Impacts and Mitigation

Operation impacts are discussed by representative Key Observation Points (KOPs) followed by a summary of impacts from Linears and Water Vapor Plumes. Four KOPs were submitted with the AFC. Potential impacts are identified by two fundamental factors for each KOP: *visual sensitivity* (the susceptibility of the setting to impact as a result of its existing characteristics, including current level of visual quality, potential visibility of the project, and sensitivity to scenic values of viewers); and the degree of *visual change* anticipated as a result of the project.

KEY OBSERVATION POINTS

KOP 1 (Figure 2)

The Otay Mountain Wilderness is located east of the project site. Operated by BLM, the wilderness area features a four-wheel drive road known as Otay Mountain Truck Trail. The wilderness area and the road are used primarily by United States Border Patrol Agents. While wilderness areas are typically open for recreation including camping, hiking and hunting, there are limits on vehicular access to these areas. Much of the Otay Mountain Wilderness Area (BLM) was devastated by the 2003 Otay Fire, and again by the Harris fire in 2008.

KOP 1 represents the view of the recreationist and the border patrol agents from the Otay Mountain Truck Trail at the western edge of the wilderness. From KOP 1, the project site is viewed from an elevated position. The foreground is composed of the roadway itself, the middle ground features the project site and the background includes the commercial-industrial buildings along Otay Mesa Road, as well as the city of Tijuana and the mountains to the south.

Visual Sensitivity

The view from the Truck Trail is of disturbed lands in the foreground, commercial development in the middle ground and the city of Tijuana and a mountain range in the background. The view is not cohesive and is quite fractured. KOP 1 has low visual quality. This disturbed and fractured view yields a low viewer concern.

The Truck Trail provides a clear and unobstructed view of the landscape below it, giving KOP1 a high degree of visibility. As the Truck trail is used primarily by Border Patrol officers, the number of viewers is low. In fact, recreational users are discouraged from using this area of the wilderness as it is a location with a lot of enforcement activity. Views from the Truck Trail are primarily from within automobiles, where the driver's attention is divided between the difficulty of navigating the 4WD road and scanning the area for fugitives. Therefore, the duration of the view is low, less than 10 seconds for the average border patrol officer. KOP 1 has a low-moderate overall viewer exposure.

Thus, based on the low visual quality and concern and the low-moderate overall viewer exposure, visual sensitivity at KOP 1 is low.

Visual Change

The addition of the proposed project to the view from KOP 1 adds interest to the view. The rhythm of the three upright and slender stacks is a pleasing repetitive vertical line. The color and texture of the new structures as represented in the simulation is in harmony with the commercial structures in the middle and background, drawing the eye through to the background. While the project structures differ greatly from the grassy field that existed at the time of the simulation, the visual contrast with the middle ground and background is only low-moderate. The tallest structures (the stacks) do not pierce the horizon line in this view and therefore while the project is centered in the view, the eye travels beyond it easily and it does not dominate the view. The visual dominance is low-moderate. In the same way that the project does not dominate the view, it also does not block the view of the commercial and urban structures or the mountain range in the distance. View blockage is low. Considering these factors, the overall visual change at KOP 1 is low to moderate**.**

KOP 1 Summary

Taking into account the low visual sensitivity and the low to moderate overall visual change, visual impacts at KOP 1 would be less than significant. Adoption of Condition of Certification **VIS-1** (proposed below to mitigate significant impacts at KOP 4) will ensure the project does not contrast with the surroundings by requiring neutral tones complimentary to the existing OMGP.

KOP 2 (Figure 3)

Otay Valley Regional Park (OTRP) is under development in the Otay River Valley. Five geographic segments have been identified as areas to be added to create the park. The park straddles the river valley and portions are in City of San Diego, City of Chula Vista and the County of San Diego. The segment identified in the Concept Plan, adopted in 2001[3], as Heritage Road to Otay Lakes is closest to the PPEC project site. Maps of the park show an extension of parklands into or adjacent to Johnson Canyon. Trail maps,

[3] Otay Valley Regional Park Concept Plan, adopted by County of San Diego, City of San Diego and City of Chula Vista in 2001.

provided by the applicant and in the Otay Mesa Specific Plan show the potential for recreational trail users to be in the vicinity of the project area.

KOP 2 is representative of the recreationist's view from a potential trail near Johnson Canyon. The KOP is a view to the east taken from the intersection of Harvest Road and Lone Star Road. These are dirt roads leading into the future park areas and used primarily by off-road vehicle drivers. KOP 2 is approximately one mile west of the PPEC project site and adjacent to an off-road vehicle track area. Future use projections are not known but assumed to be low. The foreground and middle ground are made up of undulating, grass-covered hillocks, and the existing Otay Mesa Generating Station is highly visible in the background at the base of the foothills of the San Ysidro Mountains.

Visual Sensitivity

The visual quality of KOP 2 is variable. Winter rain adds a pleasing green color to the undulating topography but by summer and fall, the verdant color has faded to dull wheat or brown. The substantial presence of the existing Otay Mesa Generating Station firmly in the background of KOP 2 lowers the visual quality to low-moderate. As the area is used primarily off-road vehicle users and assumed to be in low numbers, the viewer concern is moderate. For purposes of visual assessment, recreational areas are generally assumed to have higher levels of visual sensitivity. Based on the type of user, viewer concern at this KOP might otherwise be characterized as low. The project would be highly visible in the view, adding new structures to the highly visible view of the existing plant. The topography does little to mask the view and the PPEC's elevated position makes the visibility high. The actual numbers of viewers is unknown but is assumed to be low based on the type of activity in the area. Staff encountered only one vehicle on Heritage Road and no off-road vehicles were present at the time of the staff site visit on a weekday[4]. The view from the perspective of an off-road vehicle user would be fleeting, as the driver is likely concentrating on the roadbed itself. The view from a vehicle traversing Heritage Road may be longer, but the unpaved surface of the road would likely capture most of the driver's attention. The view duration therefore is low. Taking into account low-moderate visual quality, moderate viewer concern and low-moderate viewer exposure, overall visual sensitivity is low-moderate.

Visual Change

The introduction of the structures for the PPEC facility does not add contrast to the existing view as it is positioned visually immediately in front of the existing OMGP. The addition of the PPEC increases the vertical lines by the repetition of the stacks, but the overall forms, colors and textures are similar to the existing. The contrast is low. The new facility does not change the dominance of the industrial structures in this view. Dominance is low-moderate. The proposed facility does not block any existing views, so view blockage is low. The project as simulated remains subordinate to the San Ysidro Mountains in the background. Considering these factors the overall visual change is low.

[4] Staff site visit July 21, 2011.

KOP 2 Summary

Overall visual sensitivity is low-moderate and overall visual change at KOP 2 is low, so visual impacts at KOP 2 would be less than significant. Adoption of Condition of Certification **VIS-1** will ensure the project does not contrast with the surroundings by requiring neutral tones complimentary to the existing OMGP.

KOP 3 (Figure 4)

The Kuebler Ranch was established in 1909 on 160 acres of land.[5] By 1960 the ranch was comprised of 4700 acres. The Kuebler Ranch house, located at 511 Alta Road, approximately 0.4 mile north of the project site, was constructed in 1909 in the Spanish Eclectic Style. It has been converted to a restaurant and has potential views from the restaurant to the project site. While the Ranch dates to the early 20th Century and has an interesting local history, house and property have been determined as not eligible for listing on the California Register of Historic Resources by Energy Commission Cultural Staff. Therefore, the visual sensitivity as analyzed below is not as high as if it were an eligible or listed property.

KOP 3 represents the view from an outdoor terrace or the potential view from the restaurant toward the project site. It was selected as a KOP because of proximity to the project site, the elevated viewing position and the unobstructed view. The restaurant on the property has sensitive viewers. The restaurant has been non-operational but was expected to resume operation in 2011.

The foreground of the view consists of a partially vegetated slope leading down to a large, recently graded parcel in development as a water retention basin. The view of the project site is completely unobstructed from the KOP. The middle ground is occupied by the project site, existing transmission poles along Alta Road and a large open grassy field west of Alta Road. The fenceline of the existing Otay Mesa Generating Station is visible on the left side of the view, east of the project site. A strong, horizontal line in the background is created by a mountain range located in Mexico, more than 9 miles from KOP 3.

Visual Sensitivity

Due to the lack of uniformity in the view combined with the ground disturbance of the adjacent parcel, the visual quality of KOP 3 is low. Viewer concern is moderate to high as the KOP was chosen because of its potential impact on restaurant diners. Visibility from KOP 3 is high as the view is unobstructed by objects or landforms. It is expected that the number of viewers would be low to moderate and limited to the patrons of the restaurant and employees at the property. View duration would be limited to one to two hours for patrons of the restaurant and likely less for employees. View duration exceeding two minutes is considered high. Overall viewer exposure is moderate to high. Overall visual sensitivity, comprised of quality, concern and exposure, is moderate.

[5] PPEC 2011a, Cultural Resources Section 5.7, page 5.7-11

Visual Change

The introduction of the industrial structures of the proposed power plant creates strong contrast with the existing view. What reduces that contrast to some degree is the existence of a similar electric power plant immediately to the east of the project (not shown in the KOP photograph but visible from this location). The forms of the structures are bold and the lines include a strong verticality, especially with the three stacks. The terrain slopes away from the KOP toward the project site, providing a three-dimensional view of the proposed project's structures from the elevated position. The color is muted and textures are largely smooth. The large storage tanks on the west side of the project are shown in a brighter tone than the rest of the structures, causing them to stand out from the background more than the others. The overall contrast is moderate.

The background includes a consistent horizon line of mountains on the Mexican side of the border. The stacks as presented in the simulation do not break the horizontal horizon line of the mountain range, more than 9 miles in the distance. This reduces the dominance of the project to low from this perspective. View blockage is low from this KOP, as its elevated position allows the viewer to look over the project to the horizon beyond. The overall visual change, therefore, is low to moderate.

KOP 3 Summary

Overall visual sensitivity is moderate and overall visual change is low-moderate, consequently visual impacts would be less than significant. Adoption of Condition of Certification **VIS-1** will ensure the project does not contrast with the surroundings by requiring neutral tones complimentary to the existing OMGP..

KOP 4 (Figure 5)

KOP 4 was selected to represent the view of the motorists travelling northbound on Alta Road, approaching the project site at the intersection with Paseo de la Fuente. The view from the intersection includes foreground clutter of signs, transmissions poles, traffic signal poles and some landscaped area to the right. This is a signalized intersection. The project site occupies the middle ground, and is shown in the existing view as a flat, graded site with no vegetation. The background is composed of the terrain sloping up toward the Kuebler Ranch on the right, the R.J. Donovan Correctional Facility on the left and is dominated by the foothills of the San Ysidro Mountains. Transmission poles line Alta Road on the east side of the roadway. A sidewalk parallels the east side of Alta Road and curb, gutter and street lighting improvements have been completed and are visible in KOP 4. Alta Road is a two-lane undivided north-south roadway. It has the capacity of a Light Collector Roadway. The current Average Daily Trips by motorists of all kinds for this segment of the road is 5662. The morning and afternoon peak hour delays at this intersection are 1.5 seconds and 1.2 seconds respectively. These delays were calculated before the intersection was signalized, as the AFC indicates it is a "stop-controlled intersection[6]." Therefore, for the purposes of evaluating the viewer exposure (below), this analysis will assume longer durations at the intersection.

[6] PPEC 2011a, p. 5.11-10.

Visual Sensitivity

KOP 4 is a view that is under transformation from one of grass-covered open expanses to one that is disturbed by grading and devoid of vegetation. The project site and laydown area has been recently graded, as have the property on the west side of Alta Road. It is a discordant view of transmission poles, traffic signal poles and arms, two-lane roadbed and the distant upward sloping terrain. KOP 4 photograph does not show the Otay Mesa Generating Plant (OMGP), which is located just out of the limits of the photograph to the east. The motorist would likely see the OMGP as well, especially if stopped at the signal. The existing visual quality is low to moderate. The view is largely one seen by motorists travelling north on Alta Road. As such, it is of moderate viewer concern as the drivers are most likely focusing on driving and other traffic. The view toward the project site is highly visible to the motorist as it is immediately adjacent to Alta Road. Alta Road between Otay Mesa Road and this intersection at Paseo de la Fuente carries an average of 5662 vehicles per day. The majority of these motorists are travelling to one of the three correctional facilities located north of the project site. The number of viewers is moderate-high. The AFC provided data for delays at the intersection, which was unsignalized and “stop-controlled“ at the time of publication. The duration of the view is fleeting for those travelling at 45 mph without stopping at the signal, and considerably longer for those who are stopped by the signal. Traffic moving at 45 mph would traverse ¾ mile in one minute and be well past the project site within that timeframe. View duration is therefore moderate, estimated to be in the 20-60 second range in the scenario where the motorist is stopped at the signal. Overall viewer exposure is moderate to high. Low to moderate visual quality, moderate viewer concern and moderate to high viewer exposure produces a rating of moderate overall visual sensitivity for KOP 4.

Visual Change

The introduction of the PPEC structures into the KOP 4 view alters the landscape substantially. While the lines of the stacks are repetitive, they do not differ greatly from the verticality of the existing transmission poles lining Alta Road, and therefore have a low to moderate degree of change. The grey color of most structures, while muted, differs from existing, especially in seasons where the vegetation on the area is green. The tanks adjacent to Alta Road are shown in the simulation as a white color: this is very bright against the background and has the potential for distracting the motorist. Color change is moderate-high. Introduction of industrial structures into a view that includes little else in the middle ground is a high degree of change in both form and texture. However, the proximity to an existing power plant (OMGP) reduces those impacts to moderate-high. Contrast with the existing setting is moderate-high overall. The project structures are the largest things in the landscape in the simulated view, and therefore the dominance is high. There is a view to the foothills of the San Ysidro Range that is partially blocked by the introduction of the project structures. However, the stacks, which are the tallest elements, do not break the horizon line of the range, and therefore view blockage is moderate. The overall visual change is moderate to high.

KOP 4 Summary

KOP 4 has a moderate overall visual sensitivity and a moderate to high degree of visual change, consequently visual impacts would be significant. Adoption of Conditions of

Certification **VIS-1** and **VIS-2** would reduce the impacts to less than significant. Adoption of Condition of Certification **VIS-1** would ensure the project does not contrast with the surroundings by requiring neutral tones complimentary to the existing OMGP. Landscape perimeter plantings and street tree plantings conditioned in **VIS-2** and shown on Figure 6, Conceptual Landscape Plan, would provide a vibrant screen of vegetation that will mitigate the visual impact of the project structures and conform with the OMSP landscape requirements These planting are layered to achieve a dense screen of trees and shrubs, especially along Alta Road frontage. In addition, **VIS-2** would require screening plantings along the property border with APN 648-040-46, the construction laydown area, upon completion of the construction phase. The objective would be to create landscape screening of sufficient density and height to screen the power plant structures to the greatest feasible extent within the shortest feasible time from the adjacent property and from motorists along Alta Road and Paseo de la Fuente.

Overall Project Operation Impacts on Existing Visual Character or Quality

Project operation impacts from all identified KOPs on the existing visual character and quality of the setting would be less than significant with staff-recommended conditions of certification: Condition of Certification **VIS-1** would ensure the project does not contrast with the surroundings by requiring neutral tones complimentary to the existing OMGP surface treatment; Condition of Certification **VIS-2**, Landscaping; would provide a vibrant screen of vegetation that will mitigate the visual impact of the project structures.. With these measures, the impacts from the project at operation would not substantially degrade the existing visual character or quality of the site, and its surroundings, as perceived by sensitive receptors in the project viewshed.

Visual Resources Table 4
OVERALL VISUAL CHANGE

KOP No.	VISUAL SENSITIVITY (Existing Condition)						
	Visual Quality	Viewer Concern	Viewer Exposure				Overall Visual Sensitivity
			Visibility	No. of Viewers	Duration of View	Overall Viewer Exposure	
1	Low	Low	High	Low	Low	Low to Moderate	Low
2	Low	Moderate	High	Low	Low	Low to Moderate	Low to Moderate
3	Moderate	Moderate to High	High	Low to Moderate	High	Moderate to High	Moderate
4	Low to Moderate	Moderate	High	Moderate to High	Moderate	Moderate to High	Moderate

KOP No.	VISUAL CHANGE (Proposed Condition)							
	Project Effect							Overall Visual Change
	Contrast					Dominance	View Blockage	
	Form	Line	Color	Texture	Overall Contrast			
1	Low-Moderate	Low-Moderate	Low	Low-Moderate	Low-Moderate	Low-Moderate	Low	Low to Moderate
2	Low	Low-Moderate	Low	Low	Low	Low-Moderate	Low	Low
3	Moderate	Moderate	Low-moderate	Low	Moderate	Low	Low	Low to Moderate
4	Moderate to High	Low to Moderate	Moderate-High	Moderate to High	Moderate-High	High	Moderate	Moderate to High

KOP No.	KOP VISUAL IMPACT SIGNIFICANCE DETERMINATION			
	Overall Visual Sensitivity	**Overall Visual Change**	**Visual Impact Significance**	**Mitigation (See Staff Proposed KOP Visual Mitigation Measures)**
1	Low	Low to Moderate	Less than Significant	Adoption of Condition of Certification **VIS-1** will ensure the project does not contrast with the surroundings by requiring neutral tones

				complimentary to the existing OMGP
2	Low to Moderate	Low	Less than Significant	Adoption of Condition of Certification **VIS-1** will ensure the project does not contrast with the surroundings by requiring neutral tones complimentary to the existing OMGP
3	Moderate	Low to Moderate	Less than Significant	Adoption of Condition of Certification **VIS-1** will ensure the project does not contrast with the surroundings by requiring neutral tones complimentary to the existing OMGP
4	Moderate	Moderate to High	Less than Significant with Mitigation	Adoption of Condition of Certification **VIS-1** will ensure the project does not contrast with the surroundings by requiring neutral tones complimentary to the existing OMGP. Landscape perimeter plantings and street tree plantings conditioned in **VIS-2** and shown on Figure 6, Conceptual Landscape Plan, would provide a vibrant screen of vegetation that will mitigate the visual impact of the project structures

Linears

Transmission Lines

Two alternative routes are proposed to connect the project to the existing Otay Mesa 230kV switchyard located approximately 2000 feet east of the proposed project site. Route A is proposed to begin as an overhead power line on the north edge of the project site proceeding in an easterly direction along Calzada de la Fuente. It would extend overhead for approximately 1700 feet to the east, then be routed underground for approximately 400 feet to the switchyard connection. Route B would begin as an overhead power line from the eastern edge of the project site, run south approximately 550 feet, turn east and run east approximately 1400 feet and turn north for the final 700

feet to connect with the existing switchyard. Table 5.13-4 in the AFC lists 5 above-ground transmission line steel poles. While both Routes A and B would add additional transmission poles to the existing landscape, it is in area of heavy industrial use and an existing power plant. Undergrounding a portion of Route A reduces the visual impacts to low-moderate. Route B travels through a landscaped area and along a riparian swath, and is located away from the roadway of Paseo de la Fuente. Because of the distance from motorists' views, and its location adjacent to an existing power plant, the visual impacts of Route B are low. The KOP 4 simulation includes a transmission pole located on Route B. With implementation of **VIS-1**, specifying non-reflective poles and non-specular conductors and non-reflective and non-refractive insulators, staff anticipates no significant adverse visual impacts from the project's proposed transmission lines and poles.

Staff notes that if a revised Route B is chosen (see Footnote 1), there would exist the potential for major disruption of the existing screening landscape trees and plantings within the OMGP property landscape setback and along the existing block wall. Condition of Certification **VIS-2** would remedy this disturbance by requiring the project owner to repair and or replace the existing landscape elements (trees, shrubs, groundcover and other structures such as fences and walls) in conformance with the OMGP original Conditions of Certification and the current LORS.

Pipelines

Gas Line Alternatives A & B: Staff anticipates there would be no adverse visual impacts during the operational phase as the proposed gas lines would be underground.

Water Supply and Discharge: Staff anticipates no adverse visual impacts from these water supply and discharge lines during the operational phase as they would be underground.

Publicly Visible Water Vapor Plumes

The PPEC cooling system is a partial dry-cooling system (PDCS), which uses a hybrid of evaporative (wet-cooling) and dry-cooling technologies to minimize water use. Based on the proposed technology for the PPEC facility, potential visible plumes may rarely occur from the cooling system and/or exhaust stack. Since visible plume formation is unlikely, staff did not conduct any modeling. Cooler temperatures are more favorable to formation of visible plumes. As a peaker plant, the PPEC is most likely to be operational during hot weather when electricity demands are higher, reducing the likelihood of visible plume formation. In addition, during lower ambient temperatures, the evaporative system ramps down and most of the process cooling is provided via dry cooling; therefore, the likelihood of a visible moisture plume is greatly reduced. Table 5.13-6 in the AFC presents the heat and mass balance of the PDCS at various ambient temperatures. Turbine vendor data/GE exhaust stack parameters and meteorological data are provided in Section 5.2 and Appendix G.

The turbine stack exhaust temperatures are very high because PPEC uses simple-cycle turbines. Exhaust temperatures range from approximately 750 - 850 degrees Fahrenheit, which minimizes the formation of visible moisture plumes. The frequency of plumes from project stacks is anticipated to be low, if not virtually non-existent.

Nighttime operation, which could result in visible plumes under certain atmospheric conditions, is anticipated to be infrequent. Any plumes that may form at night will not likely be noticeable because uplighting would be minimized by the Condition of Certification **VIS-3**.

B. LIGHT OR GLARE

"Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?"

During operation, the proposed project has the potential to introduce light offsite to surrounding properties, and up-lighting to the nighttime sky. If bright exterior lights were unshielded and lights not directed onsite they could introduce significant light or glare to the vicinity. The 100-foot stacks fall well below the FAA threshold for aviation safety lighting, however Figure 3.5.1 in the AFC indicates a catwalk located at 65 feet from the finished grade on the stack. It is likely this and other maintenance areas would be lighted for worker safety. Lighting these areas may be on a demand basis. It should be noted that the existing OMGP has already introduced a source of nighttime lighting to the vicinity and was conditioned to be in compliance with San Diego County's Dark Sky Ordinance at the time of its certification.

With the effective implementation of the applicant's proposed light trespass mitigation measures as described in the AFC and staff-recommended Condition of Certification **VIS-3**, the project's operation-related lighting impacts, in the context of the existing lighting, would be less than significant and are anticipated to meet the County requirements for night time lighting. Staff recommends Condition of Certification **VIS-3** to ensure full compliance and verification of night lighting measures.

Surfaces of the facilities of the PPEC have the potential to introduce glare into the visual environment. With the effective implementation of the applicant's proposed surface treatment measures as described in the AFC and staff-recommended Condition of Certification **VIS-1**, the project would use colors and finishes that do not cause excessive glare and be in harmony with the project's environment. Staff recommends Condition of Certification **VIS-1** to ensure full compliance and verification of surface treatment to reduce daytime glare impacts to less than significant.

CUMULATIVE IMPACTS AND MITIGATION

As defined in Section 15355 of the CEQA Guidelines (California Code of Regulations, Title 14), a cumulative impact is created as a result of the combination of the project under consideration together with other existing or reasonably foreseeable projects causing related impacts. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time. In other words, while any one project may not create a significant impact to visual resources, the combination of the new project with all existing or planned projects in an area may create significant impacts. A significant cumulative impact would depend on the degree to which (1) the viewshed is altered; (2) view of a scenic resource is impaired; or (3) visual quality is diminished.

Visual Resources Table 5 lists those projects located within one mile of the proposed PPEC. A correctional facility is being proposed on a parcel across Calzada de la Fuente from PPEC. Other nearby uses that have been approved or are under review by San Diego County include a concrete and asphalt batch plant, a quarry, a business park, an industrial park and the existing OMGP. All of these projects are within Heavy Industrial, Mixed Industrial Technology Business Park or District Commercial Zones. With these zoning designations built into the Specific Plan, the existing landscape is bound to change over time. San Diego County is clustering this kind of development in a location having minimal impacts on sensitive viewing groups (i.e. residential neighborhoods, parks, schools, etc.) and in an area devoid of scenic resources and of moderate visual quality. Therefore, staff concludes that while the viewshed may be significantly altered by these activities, the area is not designated as a scenic corridor nor have any scenic resources been designated[7], and therefore there are no adverse impacts upon the views of a scenic resource or vista. In fact, staff concludes that the design regulations in the Specific Plan provide a holistic set of guidelines for development which would add uniformity and consistency to the landscape over time. This will be accomplished through site design requirements and street landscape improvements provided for in the Specific Plan. Therefore, while the cumulative visual changes will be significant once the area is built out with the known and future projects, the regulations provided for in the LORS, if applied, would mitigate the visual impact to less than significant.

Staff bases this conclusion in part on the findings of both the Draft and Final Environmental Impact Reports (DEIR/FEIR) prepared for the adoption of the East Otay Mesa Specific Plan (EOMSP). The FEIR was adopted on July 27, 1994. The FEIR concluded that, from a cumulative standpoint, the other projects proposed in the vicinity of the EOMSP would continue a pattern of land conversion from undeveloped to one of urban development. It also concluded that landforms and visual impacts would also be impacted on a cumulative basis, as loss of agricultural lands and open space would be noticeable in the sub-region. However, it concludes, the visual impacts of the views to the eastern San Ysidro Mountains would not be affected[8].

This conclusion is based in part upon a discussion in the DEIR regarding the major scenic resources in the Otay Mesa region[9]. It identifies the major scenic resources as the Otay River Valley and the San Ysidro Mountains. The report concludes that sensitively placed development at the base of the San Ysidro Mountains would not significantly detract from the aesthetic qualities and dominance that the mountains provide to the area. This is supported by staff's analysis in this document of the

[7] East Otay Mesa Specific Plan, Draft Environmental Impact Report (DEIR), October, 1993, County of San Diego Department of Planning and Land Use, pp 4.2-14. The DEIR identifies the San Ysidro Mountains as a "major scenic resource" for the area but the County of San Diego has not formally designated any scenic highways or resources in the project vicinity.

[8] East Otay Mesa Specific Plan Final Environmental Impact Report (FEIR) July 27, 1994, County of San Diego Department of Planning and Land Use, pp. A-28 to 29.

[9] East Otay Mesa Specific Plan, Draft Environmental Impact Report (DEIR), October, 1993, County of San Diego Department of Planning and Land Use, pp. 4.2-13 to 17.

viewshed from KOP-2, wherein the project simulation is viewed from the proposed Otay Valley Regional Park Expansion. The Otay River Valley is not typically visible from or to the project site, so these findings have not been included here.

As provided for in CEQA 15130:
a) Previously approved land use documents , including, but not limited to, general plans, specific plans, regional transportation plans, plans for the reduction of greenhouse gas emissions, and local coastal plans may be used in cumulative impact analysis. A pertinent discussion of cumulative impacts contained in one or more previously certified EIRs may be incorporated by reference pursuant to the provisions for tiering and program EIRs. No further cumulative impacts analysis is required when a project is consistent with a general, specific, master or comparable programmatic plan where the lead agency determines that the regional or area wide cumulative impacts of the proposed project have already been adequately addressed, as defined in section 15152(f), in a certified EIR for that plan.

b) If a cumulative impact was adequately addressed in a prior EIR for a community plan, zoning action, or general plan, and the project is consistent with that plan or action, then an EIR for such a project should not further analyze that cumulative impact, as provided in Section15183(j).

Staff concludes that, even with the age of the FEIR (1994), the findings and conclusions of that environmental document are relevant at the present time for the following reasons:

1. The EOMSP has been amended several times since its approval in 1994. These have been minor amendments, mainly to do with things such as updating landscaping requirements and EOMSP boundaries. With each amendment, no further environmental impacts were determined.

2. The FEIR included mitigation measures to reduce visual impacts to an insignificant level. It calls out the EOMSP urban design element as the vehicle providing the policies for dealing with mitigation of visual impacts[10]. The specific mitigation measures described in the FEIR were geared more to controlling residential development on hillsides and to grading, erosion and landform controls adjacent to the Johnson Canyon area. Little concern was noted for the rolling topography of the PPEC project area slated for industrial and commercial development.

3. Development of the region has been very slow and little of the planned buildout has occurred at this time. Therefore, staff finds that the integrity of the findings are still consistent with the earlier findings and applicable given the existing conditions.

PPEC is consistent with the EOMSP and the plan adequately addressed cumulative visual impacts. As discussed in the FEIR, if the project is built per the design guidelines and as conditioned by staff, no significant cumulative visual effects would occur.

[10] East Otay Mesa Specific Plan Final Environmental Impact Report (FEIR) July 27, 1994, County of San Diego Department of Planning and Land Use, pp. A-6 to A-7.

Visual Resource Table 5
Development Considered in the Cumulative Condition

Project ([11])	County	Distance from Project Site	Visual Resources Characteristics	Status of Project
(1) Vulcan Batch Plant	San Diego	Within 1 mile of project site	**Concrete & Asphalt Batch Plant**: The project is a Site Plan to construct and operate concrete and asphalt batch plants.	**Approved** The site plan for this project is approved. Building permits have been issued.
(2) Otay Hills Construction Aggregate Extraction Operation	San Diego	Within 1 mile of project site	**Aggregate Excavation**: MUP and Reclamation Plan for excavation of construction.	**Under Review** The major use permit for this project is in process.
(3) Corrections Corporation of America Correctional Facility/East Mesa Detention Facility	San Diego	Within 1 mile of project site	**Detention Facility**: Modified Major Use Permit (MUP) for a secure detention facility to be constructed in two phases. Original project is proposed to be relocated to the southeasterly portion of the previously approved MUP 98-001.	**Approved** The major use permit modification for this project is approved. Building permits were submitted but were cancelled by the applicant and never approved.
(4) Otay Crossings Commerce Park	San Diego	Within 1 mile of project site	**Industrial Subdivision**: Includes Specific Plan Amendment. The TM will subdivide the parcel into 56 industrial lots. The future right-of-way for SR-11 traverses the site, as well as the future U.S Port–of-Entry is located on the southern boundary of the site.	**Under Review** The tentative map for this project is in process.
(5) International Industrial Park	San Diego	Within 1 mile of project site	**Technology/Business Park**: Tentative Map to subdivide vacant land into 10 parcels for technology/business park use.	**Under Review** The tentative map for this project is in process.
(6) Otay Mesa Generating Plant	San Diego	Adjacent Parcel	Construction traffic would access the site regionally via: I-805 and I-5 and State Highway 905 and 125 from the west. Peak construction would generate approximately 230 average daily trips and 460 vehicle trips.	**Built**

PPEC 2011a, AFC pg.5.9-5-7, 5.9-10-12, Confirmed by County of San Diego, Dept.of Planning & Land Use 10-13-2011

[11] Numbers 1-6 refer to Visual Resources Figure 7

CONCLUSIONS

Staff concluded that with mitigation from Conditions of Certification **VIS-1**, **VIS-2**, **VIS-3**, **VIS-4** and **VIS-5**, the construction and operation of the Pio Pico Energy Center (PPEC will would not result in a significant adverse aesthetic impact according to the California Environmental Quality Act (CEQA) Guidelines.

Staff has reviewed Socioeconomics Figure 1 which shows the environmental justice population is greater than 50% within a six-mile radius of the proposed PPEC. Energy Commission staff has not identified any significant adverse direct, indirect, or cumulative visual resources impacts resulting from the operation of the project. Therefore, there are no visual resources environmental justice issues related to the operation of this project and no minority or low-income populations would be significantly or adversely impacted.

COMPLIANCE WITH APPLICABLE LORS

Staff evaluated the project to determine compliance with federal, state and local laws, ordinances, regulations and standards. Federal and state laws reviewed generally fall under scenic by-way and highway designations. No National Scenic By-Ways or State Scenic Highways are located within the project vicinity, therefore there is no discussion of conformance with these laws in this section

Staff has reviewed applicable laws, ordinances, regulations and standards and the project's consistency with those LORS. Staff concludes that, with the proposed conditions of certification, the project would conform with the LORS summarized below. The one undetermined area of conformance pertains to undergrounding of utilities (i.e. transmission lines) in new development areas. This is a policy contained in the San Diego County General Plan, GOAL COS-11, Policy-11.7 Underground Utilities, encouraging the undergrounding of transmission lines.

VISUAL RESOURCES Table 6
Applicable Laws, Ordinances, Regulations, and Standards

LORS			
Source	**Policy and Strategy Description**	**Consistency Determination**	**Basis for Consistency**
County of San Diego General Plan Update August 3, 2011 Chapter 2: Land Use Element Goal LU-11, Policy LU-11.2 Compatibility with Community Character.	Require that commercial, office, and industrial development be located, scaled, and designed to be compatible with, respect and enhance the unique character of the community.	Yes	The project is located in a Heavy Industrial Zone, adjacent to an existing power plant and meets the site design requirements of the OMSP. OMSP informs the development in the project area by providing standards for site planning and landscaping. As proposed, the PPEC meets the standards for street tree placement and selection, planter dimensions, lighting, setback landscaping, slope plantings and plant species.
County of San Diego General Plan Update August 3, 2011 Chapter 2: Land Use Element Goal LU-11, LU-11.11 Industrial Compatibility with Adjoining Uses.	Require industrial land uses with outdoor activities or storage to provide a buffer from adjacent incompatible land uses (refer to Policy LU-11.9 for examples of buffering).	Yes	The project is not located next to incompatible uses.

County of San Diego General Plan Update August 3, 2011 Chapter 4: Conservation and Open Space Element GOAL COS-4 Water Management, COS-4.2 Drought-Efficient Landscaping.	Require efficient irrigation systems and in new development encourage the use of native plant species and non-invasive drought tolerant/low water use plants in landscaping.	Yes, as conditioned	Condition of Certification **VIS-2** requires conformance with San Diego County's Landscape and Irrigation Plan submittal process. The conceptual landscape plan, (see Visual Resources**-Figure 6)**, uses drought-tolerant plant species identified in OMSP.
County of San Diego General Plan Update August 3, 2011 Chapter 4: Conservation and Open Space Element GOAL COS-11, Policy COS-11.1, Protection of Scenic Resources	Require the protection of scenic highways, corridors, regionally significant scenic vistas, and natural features, including prominent ridgelines, dominant landforms, reservoirs, and scenic landscapes.	Yes	The PPEC is not located within the vicinity of significant scenic resources.
County of San Diego General Plan Update August 3, 2011 Chapter 4: Conservation and Open Space Element GOAL COS-11, Policy-11.2 Scenic Resource Connections	Promote the connection of regionally significant natural features, designated historic landmarks, and points of regional historic, visual, and cultural interest via designated scenic corridors, such as scenic highways and regional trails.	Yes	The PPEC is not located near significant natural or cultural resources. A recreational trail is under construction along Calzada de la Fuente, north of the project site but the project would not impede the completion of the trail.

County of San Diego General Plan Update August 3, 2011 Chapter 4: Conservation and Open Space Element GOAL COS-11, Policy-11.5 Collaboration with Private and Public Agencies.	Coordinate with the California Public Utilities Commission, power companies, and other public agencies to avoid siting energy generation, transmission facilities, and other public improvements in locations that impact visually sensitive areas whenever feasible. Require the design of public improvements within visually sensitive areas to blend into the landscape.	Yes	PPEC would not be located in a visually sensitive area.
County of San Diego General Plan Update August 3, 2011 Chapter 4: Conservation and Open Space Element GOAL COS-11, Policy-11.7 Underground Utilities	Require new development to place utilities underground and encourage "undergrounding" in existing development to maintain viewsheds, reduce hazards associated with hanging lines and utility poles, and to keep pace with current and future technologies.	Undetermined, pending San Diego County Comments	It is not clear that the development of a power plant and ancillary facilities would necessarily need to adhere to the undergrounding of utilities requirement. Electric transmission poles already exist on Alta Road adjacent to the project.
San Diego County Code of Regulatory Ordinances, Section 51.201-209, Light Pollution Code (LPC), adopted by Ordinance 9974, 4-3-09 (Dark Sky Ordinance)	LPC regulates outdoor lighting in Zones A and B. The project is located in Zone B, more than 15 miles from Palomar and Mount Laguna Observatories.	Yes, as conditioned	Per Condition of Certification **VIS-3**, Lighting plans would be required to be submitted to determine that the project would comply with the requirements of this code. To comply with this code, the plan must include selection of luminaries that reduce skyglow, light trespass and glare.

San Diego County Zoning Ordinance Performance Standards Part 6 General Regulations 6322 Outdoor Lighting, 6324 Lighting Permitted in Required Yards, 6326 Lighting Not in Required Yards	Regulates lighting types, hours of operation, light trespass and requires compliance with the Dark Skies Ordinance.	Yes, as conditioned	Per Condition of Certification **VIS-3**, Lighting plans would be required to be submitted to determine that the project would comply with the requirements of these regulations. To comply, plans must meet the LPC, illuminate only the site itself, use horizontal cut-off fixtures, minimize light trespass, and meet minimum height and spacing requirements.
County of San Diego Guidelines for Determining Significance and Report Format and Content Requirements, Dark Skies and Glare, Modified January 15, 2009.	Section 4.0 Provides guidelines for determining significance of impacts from a project's proposed lighting. Significance is found if the project proposes: 1.) Outdoor light fixtures that do not conform to the lamp type and shielding requirements in the LPC; 2.) The project would operate Class I or Class III outdoor lighting between 11:00pm and sunrise that is not otherwise exempted by the LPC; 3.) The project will generate light trespass that exceeds 0.2 footcandles measured five feet onto the adjacent property; 4.) the project will install highly reflective building materials; and 5.) the project does not conform to applicable Federal, State or local statute or	Yes, as conditioned	Per Condition of Certification **VIS-3**, Lighting plans would be required to be submitted to determine that the project would comply with the requirements of the guidelines and the LPC (above).

	regulation , including the LPC.		
County of San Diego, Water Conservation in Landscaping Ordinance, Title 8, Division 6, Chapter 7 of the San Diego County Code.	A landscape documentation package must be submitted with a building permit application for an industrial use where the landscaped area is 1000 square feet or more that meets the code's requirements.	Yes, as conditioned	Condition of Certification **VIS-2** requires a complete landscape documentation package to be submitted to the CPM for approval and to San Diego County for review and comment.
San Diego County, East Otay Mesa Specific Plan, Urban Design Element, Chapter Two-Plan Elements, Master Streetscape Plan	Alta Road is identified as a collector road requiring trees planted every 25 feet and 10 feet from the face of the curb. A 2-1/2- foot planter shall separate the roadway from the sidewalks with shrubs spaced every 3 feet on center.	Yes, as conditioned	Condition of Certification **VIS-2** ensures that the landscape documentation package will be in conformance with the Conceptual Landscaping Plan, Figure 6, which meets these requirements.
San Diego County, East Otay Mesa Specific Plan, Regulatory Provisions, Table 3.2-1 Site Planning Standards	• Public Utility Structures: shall be located underground or appropriately screened; • Fences: Within the setback area, a fence, wall, hedge or other barrier shall have a maximum height of 6 feet. Noise walls may be higher. Beyond the setback area, fences are permitted up to the maximum height applicable to the main building. Goal	Yes, as conditioned	Conditions of Certification **VIS-2** and **VIS-3** condition the project to generally adhere to these regulations. Although "chain link fencing is generally excluded," staff interprets this as providing some flexibility for its use in certain circumstances. Condition of Certification **VIS-2** landscape requirements will generally screen the fencing with

	is to create industrial and business parks with a strong identity and cohesive, visually unified character. The specific plan allows any durable material. Chain link is generally excluded but is permitted in interior lot locations in Heavy Industrial or Mixed Industrial where the fence is located outside the setback from the public right-of-way. • Lighting must comply with Light Pollution Code (51.201-209) and have directional shields; wall-packs are permitted with cut-off luminaries.		plantings and requires a screening material to block views to the interior of the project site, thereby lessening the visual impact of the fence itself.
San Diego County, East Otay Mesa Specific Plan, Regulatory Provisions, Table 3.2-2 Landscaping Standards	Landscape plans for all development in East Otay Mesa shall be submitted and approved pursuant to Sections 86.701-86.729 of the San Diego County Code. Requirements are identified for the following: • General Landscaping Notes • Streetscapes • Building Setback Landscaping • Parking Lot Landscaping • Screening • Minimum Standards (including slopes) • Irrigation	Yes, as conditioned	Condition of Certification **VIS-2** ensures that the landscape documentation package will be in conformance with the Conceptual Landscaping Plan, Visual Resources **Figure 6**, which meets these requirements.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Comments have been received from the U.S. Customs and Border Protection office in Chula Vista, CA. These were docketed on August 8, 2011[12]. Comments were provided by Daniel J. Parks and center on security issues and illegal activity. Relative to visual resources, preferences were expressed for fencing to have concertina wire and a screened backdrop. Hardscape is preferred by the Border Patrol but if plantings are used, low ground cover is requested and that trees and shrubs be kept to a minimum and that planting lines keep to an east-to-west orientation. The letter stated that they understand there may be outside considerations regarding the landscape. The landscape guidelines and standards for the Otay Mesa Specific Plan Area do require denser tree and shrub planting than the expressed Border Patrol preferences. Figure 6, Conceptual Landscaping Plan, has been submitted by the applicant and meets the County's Specific Plan requirements. Staff addresses the need for screened fencing in the Conditions of Certification **VIS-2** and **VIS-4**.

PROPOSED CONDITIONS OF CERTIFICATION

Surface Treatment of Project Structures and Buildings

VIS-1 The project owner shall treat the surfaces of all project structures and buildings visible to the public such that a) their colors minimize visual intrusion by blending with the landscape or by providing architectural interest; b) their colors and finishes do not create excessive glare; and c) their colors and finishes are consistent with local policies and ordinances. Surface color treatment shall include painting of turbine generators, stacks, dry and wet cooling structures, tanks and other features in an earth tone color and value to match the surrounding hillsides and complement the existing OMGP. The transmission line poles and conductors shall be non-specular and non-reflective, and the insulators shall be non-reflective and non-refractive. The project owner shall submit for CPM review and approval, a specific surface treatment plan that will satisfy these requirements. The treatment plan shall include:

a.) a description of the overall rationale for the proposed surface treatment, including the selection of the proposed color(s) and finishes;

b.) a list of each major project structure, building, tank, pipe, and wall; and fencing, specifying the color(s) and finish proposed for each. Colors must be identified by vendor, name, finish and number; or according to a universal designation system;

c.) one set of 11" x 17" color photo simulations at life size scale of the treatment proposed for use on project structures, including structures treated during manufacture, from a representative point of view (Key

[12] USCBP 2011A – U.S. Customs and Board Protection / D. Parks (tn 61791). Comments Letter from U.S. Customs and Board Protection, dated August 8, 2011. Submitted to CEC/Docket Unit on August 8, 2011.

Observation Point 4-location shown on Visual Resources Figure 5 of the Staff Assessment) or color-rendered elevation drawings on 18” x 24” minimum sheet size;

d.) color samples on color card or painted steel;

e.) a specific schedule for completion of the treatment; and

f.) a procedure to ensure proper treatment maintenance for the life of the project.

The project owner shall not specify to the vendors the treatment of any buildings or structures treated during manufacture, or perform the final treatment on any buildings or structures treated in the field, until the project owner receives notification of approval of the treatment plan by the CPM. Subsequent modifications to the treatment plan are prohibited without CPM approval.

Verification: At least 90 days prior to specifying to the vendor the colors and finishes of the first structures or buildings that are surface treated during manufacture, the project owner shall submit the proposed treatment plan to the CPM for review and approval and simultaneously to the County of San Diego or responsible jurisdiction for review and comment. If the CPM determines that the plan requires revision, the project owner shall provide to the CPM a plan with the specified revision(s) for review and approval by the CPM before any treatment is applied. Any modifications to the treatment plan must be submitted to the CPM for review and approval.

Prior to the start of commercial operation, the project owner shall notify the CPM that surface treatment of all listed structures and buildings has been completed and are ready for inspection and shall submit one set of electronic color photographs from the same key observation point identified in (c) above.

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

Landscape Improvements, Permanent Fencing and Screening

VIS-2 The project owner shall provide landscaping that reduces the visibility of the power plant structures and is in accordance with local policies. Trees and other vegetation shall be placed along the facility boundaries, in conformance with the Conceptual Landscape Plan, Figure 6 in the Staff Assessment. In addition, the project owner shall provide screening plantings along the property border with APN 648-040-46, the construction laydown area, upon completion of the construction phase. The objective shall be to create landscape screening of sufficient density and height to screen the power plant structures to the greatest feasible extent within the shortest feasible time from

the adjacent property. Landscape plantings and other elements must meet the requirements of the Otay Mesa Specific Plan.

The landscape plan shall also include the permanent perimeter fencing. The Conceptual Landscape Plan (Figure 6 in the Staff Assessment) includes 6-foot chain link fencing. All chain link fencing shall include neutral-colored privacy slats to screen views of the interior. Concertina razor wire or similar security obstacles shall only be installed on the interiors of the fencing and shall not be visible from the exterior.

The project owner shall submit to the CPM for review and approval and simultaneously to the County of San Diego for review and comment a Landscape Documentation Package whose proper implementation will satisfy these requirements and the requirements of the Water Conservation in Landscaping Ordinance. The plan shall include:

a.) a detailed Landscape Design Plan, at a reasonable scale (1"=40' maximum). The plan shall demonstrate how the requirements stated above shall be met. The plan shall provide a detailed installation schedule demonstrating installation of as much of the landscaping as early in the construction process as is feasible in coordination with project construction. The Landscape Design Plan shall include a Planting Plan with Plant List (prepared by a qualified landscape architect familiar with local growing conditions) of proposed species, specifying installation sizes, growth rates, expected time to maturity, expected size at five years and at maturity, spacing, number, availability, and a discussion of the suitability of the plants for the site conditions and mitigation objectives, with the objective of providing the widest possible range of species from which to choose; specifications for groundcover, top-dressing of planting areas and weed abatement measures. Existing trees (if any) shall be noted on the Landscape Plan. The Landscape Design Plan shall specify all materials to be used for interior roads, walks, parking areas and hardscape materials (i.e. gravel) to be placed in areas that are not paved or planted, and exterior fencing or walls.

b.) an Irrigation Plan in compliance with the Water Conservation in Landscaping Ordinance. The plan shall include the following: complete Irrigation Design Plan, specifying system components and locations, and shall include the Water Efficient Landscape Worksheet.

c.) maintenance procedures, including any needed temporary irrigation for hydro-seeded areas, and a plan for routine annual or semi-annual debris removal for the life of the project; and

d.) a procedure for monitoring and replacement of unsuccessful plantings for the life of the project.

e.) Construction activities which disturb or remove portions of the OMGP existing landscaping shall require a landscape and irrigation plan package be

submitted to specify the repair and or replacement of the existing landscape elements at OMGP (trees, shrubs, groundcover and other structures such as fences and walls) for review by County of San Diego DPLU and the CPM to assure conformance to the current LORS and the OMGP original Conditions of Certification.

The plan shall not be implemented until the project owner receives final approval from the CPM.

Verification: The landscaping plan shall be submitted to the CPM for review and approval and simultaneously to the County of San Diego for review and comment at least 90 days prior to installation. If the CPM determines that the plan requires revision, the project owner shall provide to the CPM and simultaneously to the County of San Diego a revised plan for review and approval by the CPM. The submittal shall include 3 printed sets of full-size plans (not to exceed 24" x 36"), 3 sets of 11" x 17" reductions and a digital copy in PDF format.

Planting must occur during the first optimal planting season following site mobilization. The project owner shall simultaneously notify the CPM and the County of San Diego within seven days after completing installation of the landscape plan that the site is ready for inspection. A report to the CPM, equivalent to the County of San Diego's Certificate of Completion Package in Title 8, Division 6, Chapter 7, shall be submitted in conjunction with the inspection.

The project owner shall report landscape maintenance activities, including replacement of dead or dying vegetation, for the previous year of operation in each Annual Compliance Report.

Permanent Exterior Lighting

VIS-3 To the extent feasible, consistent with safety and security considerations, the project owner shall design and install all permanent exterior lighting such that:

a.) lamps and reflectors are not visible from beyond the project site, including any off-site security buffer areas;

b.) lighting does not cause excessive reflected glare;

c.) direct lighting does not illuminate the nighttime sky;

d.) illumination of the project and its immediate vicinity is minimized, and

e.) the plan complies with local policies and ordinances.

The project owner shall submit to the CPM for review and approval and simultaneously to County of San Diego for review and comment a lighting mitigation plan that includes the following:

a.) Location and direction of light fixtures shall take the lighting mitigation requirements into account;

b.) Lighting design shall consider setbacks of project features from the site boundary to aid in satisfying the lighting mitigation requirements;

c.) Lighting shall incorporate fixture hoods/shielding, with light directed downward or toward the area to be illuminated;

d.) Light fixtures that are visible from beyond the project boundary shall have cutoff angles that are sufficient to prevent lamps and reflectors from being visible beyond the project boundary, except where necessary for security;

e.) All lighting shall be of minimum necessary brightness consistent with operational safety and security;

f.) Lights in high illumination areas not occupied on a continuous basis (such as maintenance platforms) shall have (in addition to hoods) switches, timer switches, or motion detectors so that the lights operate only when the area is occupied and

g.) Statement of conformance with all federal, state and local statutes and regulations related to dark skies or glare, including, but not limited to, the San Diego County Light Pollution Code.

Verification: At least 90 days prior to ordering any permanent exterior lighting, the project owner shall contact the CPM to discuss the documentation required in the lighting mitigation plan. At least 60 days prior to ordering any permanent exterior lighting, the project owner shall submit to the CPM for review and approval and simultaneously to the San Diego County for review and comment a lighting mitigation plan. If the CPM determines that the plan requires revision, the project owner shall provide to the CPM a revised plan for review and approval by the CPM. The submittal shall include 3 printed sets of full-size plans (not to exceed 24” x 36”), 3 sets of 11” x 17” reductions and a digital copy in PDF format. The project owner shall not order any exterior lighting until receiving CPM approval of the lighting mitigation plan.

Prior to commercial operation, the project owner shall notify the CPM that the lighting has been completed and is ready for inspection. If after inspection the CPM notifies the project owner that modifications to the lighting are needed, within 30 days of receiving that notification the project owner shall implement the modifications and notify the CPM that the modifications have been completed and are ready for inspection.

Within 48 hours of receiving a lighting complaint, the project owner shall provide the CPM with a complaint resolution form report as specified in the Compliance General Conditions including a proposal to resolve the complaint, and a schedule for implementation. The project owner shall notify the CPM within 48 hours after completing implementation of the proposal. A copy of the complaint resolution form report shall be submitted to the CPM within 30 days.

Construction Fencing

VIS-4 The project owner shall install temporary construction fencing on the project site and the construction laydown area in such a way as to screen views of the construction activity and equipment. The construction fencing shall meet the following requirements: chain link fence shall have a neutral-colored privacy screening material applied to the fence to reduce or eliminate views into the project site

Verification: At least 60 days prior to site mobilization, the project owner shall submit to the CPM a Construction Fencing Plan. The plan shall include the following: written description and photographic images of the proposed construction fencing and privacy screening material.

Construction Lighting

VIS-5 The project owner shall ensure that lighting for construction of the power plant is used in a manner that minimizes potential night lighting impacts, as follows:

a.) all lighting shall be of minimum necessary brightness consistent with worker safety and security;

b.) all fixed position lighting shall be shielded or hooded, to the extent feasible given safety and security concerns, and directed downward toward the area to be illuminated to prevent direct illumination of the night sky and direct light trespass (direct light extending outside the boundaries of the power plant site or the site of construction of ancillary facilities, including any security related boundaries); and

c) wherever feasible, safe and not needed for security, lighting shall be kept off when not in use.

Verification: Within seven days after the first use of construction lighting, the project owner shall notify the CPM that the lighting is ready for inspection. If the CPM requires modifications to the lighting, within 15 days of receiving that notification, the project owner shall implement the necessary modifications and notify the CPM that the modifications have been completed.

Within 48 hours of receiving a lighting complaint, the project owner shall provide the CPM with a complaint resolution form report as specified in the General Conditions section including a proposal to resolve the complaint, and a schedule for implementation. The project owner shall notify the CPM within 48 hours after completing implementation of the proposal. A copy of the complaint resolution form report shall be included in the subsequent Monthly Compliance Report following complaint resolution.

REFERENCES

California Code of Regulations (CCR), Title 24, Part 2

California Department of Transportation, California Scenic Highway Program, http://www.dot.ca.gov/hq/LandArch/scenic_highways/scenic_hwy.htm

California Title 14-Natural Resources, Division 1.5-Department of Forestry, Chapter 7-Fire Protection, Subchapter 2 SRA Fire Safe Regulations, Articles 1-5, September 1, 1991

California Streets and Highways Code, sections 260 through 263 – Scenic Highways

County of San Diego, Code of Regulatory Ordinances

County of San Diego, General Plan Update, August 3, 2011

County of San Diego, Guidelines for Determining Significance and Report Format and Content Requirements, Dark Skies and Glare, Modified January 15, 2009

County of San Diego, East Otay Mesa Specific Plan, amended September 15, 2010

Federal Aviation Administration, Obstruction Marking and Lighting Advisory Circular AC70/7460-1K, eff. 02/01/07

National Scenic Byway (ISTEA 1991, Title 23, section 162)

National Scenic Byways Program, http://www.byways.org/ and http://www.bywaysonline.org/

Otay Valley Regional Park Concept Plan, July 18, 1997

PPEC 2011a – Pio Pico Energy Center, LLC / G. Chandler (tn 59646). Application for Certification Volume 1 & 2, dated February 9, 2011. Submitted to CEC/Docket Unit on February 9, 2011.

PPEC 2011d – Pio Pico Energy Center, LLC (tn 60177). Data Adequacy Supplement, dated April 1, 2011. Submitted to CEC/Docket Unit on April 1, 2011.

PPEC 2011h – Pio Pico Energy Center, LLC / M. Foster (tn 61017). Pio Pico Energy Center LLC's AFC Refinement, dated June 8, 2011. Submitted to CEC/Docket Unit on June 8, 2011.

PPEC 2011k – Pio Pico Energy Center, LLC / M. Foster (tn 61384). Applicant's Responses to Commission Staff Data Request Set 1 (#1-59), dated July 15, 2011. Submitted to CEC/Docket Unit on July 15, 2011.

PPEC 2011p – Pio Pico Energy Center, LLC / K. Hellwig (tn 62192). Supplemental Responses to Data Requests Relating to Water Resources, Land Use, Visual Resources and Biological Resources, dated September 13, 2011. Submitted to CEC/Docket Unit on September 13, 2011.

PPEC 2011s – Pio Pico Energy Center, LLC/M. Foster (tn 62652). Application for Certification Refinement – Enhanced Water Treatment System, dated October 27, 2011. Submitted to CEC/Docket Unit on October 27, 2011.

Pio Pico Energy Center, Supplemental Response to Biological Resources Data Requests from Ann Crisp, dated November 8, 2011. Submitted to CEC/Docket Unit on November 28, 2011.

USCBP 2011A – U.S. Customs and Board Protection / D. Parks (tn 61791). Comments Letter from U.S. Customs and Board Protection, dated August 8, 2011. Submitted to CEC/Docket Unit on August 8, 2011.

APPENDIX VR-1

ENERGY COMMISSION VISUAL RESOURCE ANALYSIS EVALUATION CRITERIA

Energy Commission staff conducts a visual resource analysis according to Appendix G, "Environmental Checklist Form—Aesthetics," California Environmental Quality Act (CEQA). The CEQA analysis requires that commission staff make a determination of impact ranging from "Adverse and Significant" to "Not Significant."

Staff's analysis is based on Key Observation Points or KOPs. KOPs are photographs of locations within the project area that are highly visible to the public—for example, travel routes; recreational and residential areas; and bodies of water as well as other scenic and historic resources.

Those photographs are taken to indicate existing conditions without the project and then modified to include a simulation of the project. Consequently, staff has a visual representation of the viewshed before and after a project is introduced and makes its analysis accordingly. Information about that analytical process follows.

Visual Resource Analysis Without Project

When analyzing KOPs of existing conditions without the project, staff considers the following conditions: visual quality, viewer concern, visibility, number of viewers, duration of view. Those conditions are then factored into an overall rating of viewer exposure and viewer sensitivity. Information about each condition and rating follows.

Visual Quality

An expression of the visual impression or appeal of a given landscape and the associated public value attributed to the resource. Visual quality is rated from *high* to *low*. A high rating is generally reserved for landscapes viewers might describe as picture-perfect.

Landscapes rated high generally are memorable because of the way the components combine in a visual pattern. In addition, those landscapes are free from encroaching elements, thus retaining their visual integrity. Finally, landscapes with high visual quality are visually coherent and harmonious when each element is considered as part of the whole. On the contrary, landscapes rated *low* are often dominated by visually discordant human alterations.

Viewer Concern

Viewer concern represents the reaction of a viewer to visible changes in the viewshed — an area of land visible from a fixed vantage point. For example, viewers have a high expectation for views formally designated as a scenic area or travel corridor as well as for recreational and residential areas. Viewers generally expect that those views would be preserved. Travelers on highways and roads, including those in agricultural areas, are generally considered to have moderate viewer concerns and expectations.

However, viewers tend to have low-to-moderate viewer concern when viewing commercial buildings. Industrial uses typically have the lowest viewer concern. Regardless, the level of concern could be lower if the existing landscape contains discordant elements. In addition, some areas of lower visual quality and degraded visual character may contain particular views of substantially higher visual quality or interest to the public.

Visibility

Visibility is a measure of how well an object can be seen. Visibility depends on the angle or direction of views; extent of visual screening; and topographical relationships between the object and existing homes, streets, or parks. In that sense, visibility is determined by considering any and all obstructions that may be in the sightline—trees and other vegetation; buildings; transmission poles or towers; general air quality conditions such as haze; and general weather conditions such as fog.

Number of Viewers

Number of viewers is a measure of the number of viewers per day who would have a view of the proposed project. *Number of viewers* is organized into the following categories: residential according to the number of residences; motorist according to the number of vehicles; and recreationists.

Duration of View

Duration of view is the amount of time to view the site. For example, a high or extended view of a project site is one reached across a distance in two minutes or longer. In contrast, a low or brief duration of view is reached in a short amount of time—generally less than ten seconds.

Viewer Exposure

Viewer exposure is a function of three elements previously listed, *visibility*, *number of viewers*, and *duration of view*. Viewer exposure can range from a *low* to *high*. A partially obscured and brief background view for a few motorists represents a low value; and unobstructed foreground view from a large number of residences represents a high value.

Visual Sensitivity

Visual sensitivity is comprised of three elements previous listed, *visual quality*, *viewer concern*, and *viewer exposure*. Viewer sensitivity tends to be higher for homeowners or people driving for pleasure or engaged in recreational activities and lower for people driving to and from work or as part of their work.

Visual Resource Analysis with Project

Visual resource analyses with photographic simulations of the project involve the elements of contrast, dominance, view blockage, and visual change. Information about each element follows.

Contrast

Contrast concerns the degree to which a project's visual characteristics or elements — form, line, color, and texture — differ from the same visual elements in the existing landscape. The degree of contrast can range from *low* to *high*. A landscape with forms, lines, colors, and textures similar to those of a proposed energy facility is more visually absorbent; that is, more capable of accepting those characteristics than a landscape in which those elements are absent. Generally, visual absorption is inversely proportional to visual contrast.

Dominance

Dominance is a measure of (a) the proportion of the total field of view occupied by the field; (b) a feature's apparent size relative to other visible landscape features; and (c) the conspicuousness of the feature due to its location in the view.

A feature's level of dominance is 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 (1) near the center of the view; (2) elevated relative to the viewer; or (3) has the sky as a backdrop. As the distance between a viewer and a feature increases, its apparent size decreases; and consequently, its dominance decreases. The level of dominance ranges from *low* to *high*.

View Blockage

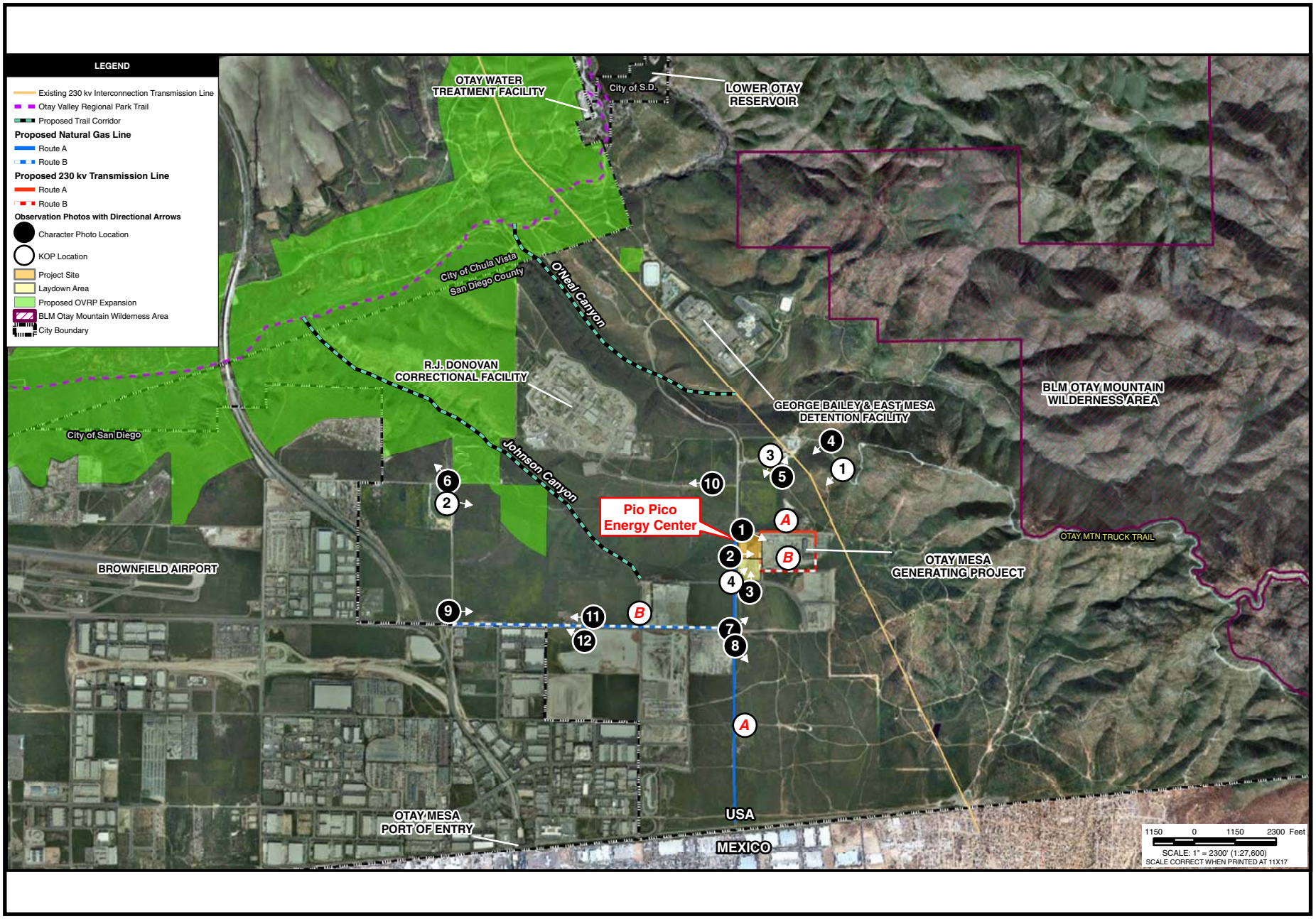
The extent to which any previously visible landscape features are blocked from view constitutes view disruption. The view is also disrupted when the continuity of the view is interrupted. When considering a project's features, higher quality landscape features can be disrupted by lower quality project features, thus resulting in adverse visual impacts. The degree of view disruption can range from *none* too *high*.

Visual Change

Visual change is a function of *contrast*, *dominance*, and *view disruption*. Generally, *contrast* and *dominance* contribute more to the degree of visual change than does *view disruption*.

VISUAL RESOURCES - FIGURE 1

Pio Pico Energy Center - Key Observation Points (KOPS)



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SOURCE: AFC Figure 5.13-3

VISUAL RESOURCES - FIGURE 2

Pio Pico Energy Center - Existing and Simulated View of Project from KOP #1

KOP 1- Existing View from Otay Mountain Truck Trail looking towards project site (approximately 0.6 miles northeast of project)



KOP 1- Simulated view from Otay Mountain Truck Trail looking southwest towards project site (approximately 0.6 miles northeast of project). This photo is meant to be a representative view from the Otay Mountain Wilderness Area.



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SOURCE: AFC Figure 5.13-10, 11 KOP 1

VISUAL RESOURCES - FIGURE 3

Pio Pico Energy Center - Existing and Simulated View of Project from KOP #2

KOP 2- Existingview from off-highway vehicle tack area at the Proposed Otay Valley Regional Park Expansion looking southeast towards the project site.



KOP 2- Simulated view from off-highway vehicle track area at the Proposed Otay Valley Regional Park Expansion looking southeast toward project site. This photo is meant to represent “worst case” views from recreational park users.



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SOURCE: AFC Figure 5.13-12, 13 KOP 2

VISUAL RESOURCES - FIGURE 4

Pio Pico Energy Center - Existing and Simulated View of Project from KOP #3

KOP 3- Existing view from Kuebler Ranch, looking southwest toward project site.



KOP 3- Simulated view from Kuebler Ranch, looking southwest toward project site. This photo is meant to represent the view from diners at the restaurant.



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SOURCE: AFC Figure 5.13-14, 15 KOP 3

VISUAL RESOURCES - FIGURE 5

Pio Pico Energy Center - Existing and Simulated View of Project from KOP #4B



KOP 4B: Existing motorists' view for northbound travelers on Alta Road (commuters to Richard J. Donovan Correction Facility and East Mesa Detention Center), approaching the intersection of Alta Road and Paseo de la Fuente, looking northeast toward project site.



KOP 4B: Simulated motorists' view for northbound travelers on Alta Road (commuters to Richard J. Donovan Correction Facility and East Mesa Detention Center), approaching the intersection of Alta Road and Paseo de la Fuente, looking northeast toward project site. This photo is meant to represent the "worst-case" traveler/commuter view from Alta Road.

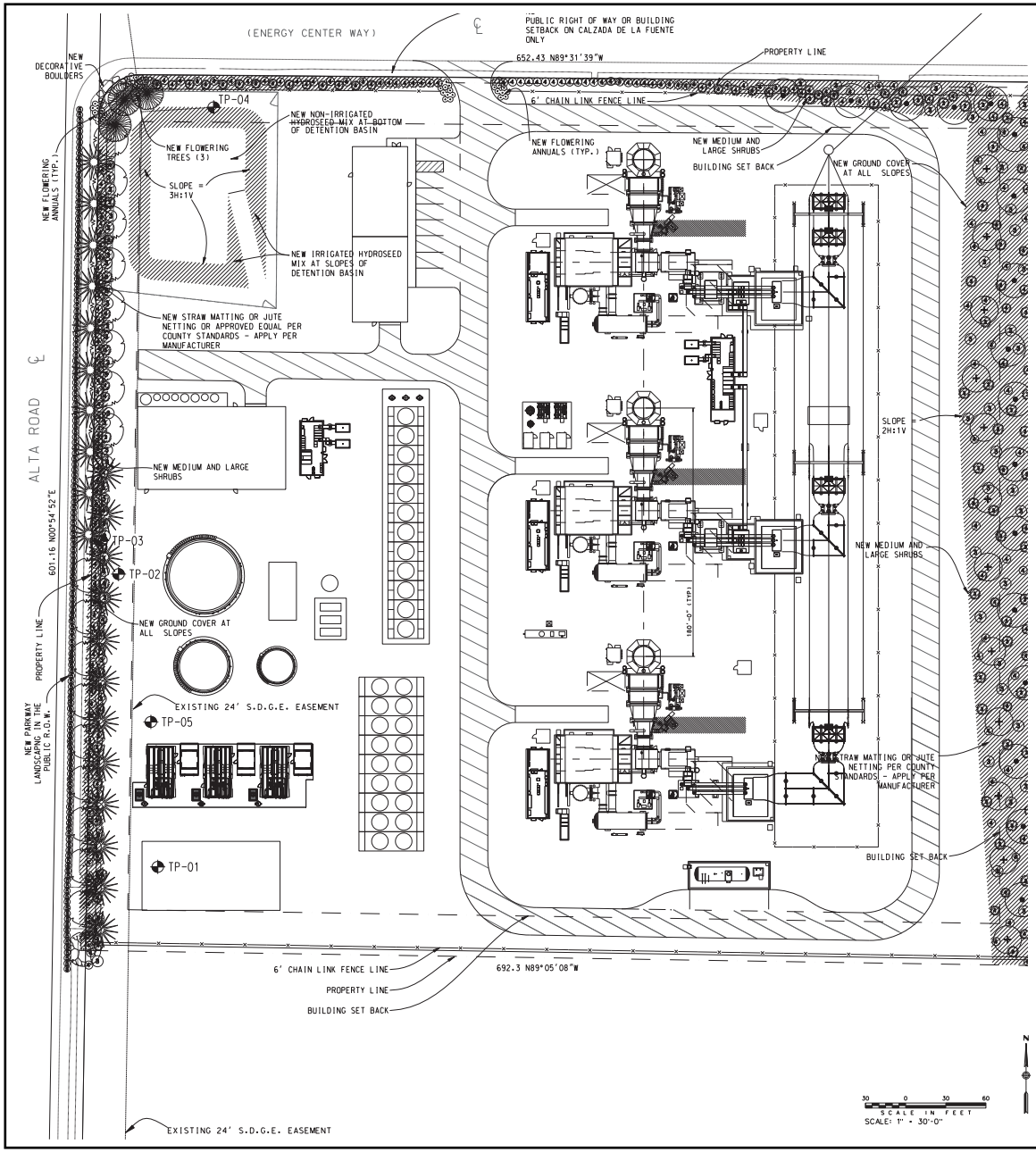
VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMETAL PROTECTION DIVISION

SOURCE: AFC Figure 5.13-19, 20 KOP 4B

VISUAL RESOURCES - FIGURE 6

Pio Pico Energy Center - Conceptual Landscaping Plan



PLANTING LEGEND				NOTE: ALL STREET & PARKWAY TREES TO BE 24" BOXES. ALL SLOPE TREES TO BE 5 GAL.
QTY	SYMBOL	BOTANICAL NAME	COMMON NAME	DESCRIPTION / SIZE
		TREES:		
14	■	CERATONIA SILIQUA	CAROB	LARGE BROAD-HEADED (25' O.C.) 5 GAL. ON SLOPES/ 24" BOX IN PARKING 25' SPREAD / EVERGREEN
14	+	LIQUIDAMBAR STRYRACIFLUA	SWEET GUM	LARGE DECIDUOUS 5 GAL. (30' O.C.)
		STREET TREES:		
51	•	PODOCARPUS GRACILIOR	FERN PINE	LARGE CANOPY (25' O.C.) 24" B CONTAINER/ EVERGREEN
19	°	PINUS CANARIENSIS	CANARY ISLAND PINE	LARGE BROAD-HEADED (30' O.C.) 5 GAL. ON SLOPES/ 24" BOX ON STREET AND IN PARKING 25' SPREAD / EVERGREEN
		MEDIAN TREES:		
32		GEIJERA PARVIFOLIA	AUSTRALIAN WILLOW	MEDIUM GREEN, DROOPING LEAVES/ 24" BOX - 25' ON CENTER/ EVERGREEN
		MAJOR INTERSECTION TREES:		
11		ALBIZIA JULIBRISSIN	SILK TREE	FLOWERING ORNAMENTAL 24" BOX-GROUPS OF 3, SUMMER PINK FLUFFY FLOWERS / EVERGREEN
		SDG&E APPROVED TREES (ALTA ROAD):		
22		PITTOSPORUM PHILLYRAEOIDES	WILLOW PITTOSPORUM	SLOW GROWING, DROUGHT TOLERANT (30' O.C.) 5 GAL. ON SLOPES/ 24" BOX ON STREET AND IN PARKING 25' SPREAD / EVERGREEN
18		ARBUTUS UNEDO	STRAWBERRY TREE	
63		RAPHIOLEPIS	MAJESTIC BEAUTY	MODERATE GROWTH TO 15', DARK GREEN, LARGE LEAVES, DROUGHT TOLERANT (25' O.C.) 24" BOX / EVERGREEN
		SHRUBS:		
298	③	ALYOGYNE HUEGELII	BLUE HIBISCUS	SCREEN SHRUBS (4'-6' HT.) (5' O.C.) 1 GAL
368	③	COMAROSTOAPHYLIS - DIVERSIFOLIA	SUMMER HOLLY	
432	④	RAPHIOLEPHIS INDICA 'PINK CLOUD'	INDIA HAWTHORN	MEDIUM SHRUB (2'-3' HT.) (3' O.C.) 5 GAL. IN PARKWAY & SETBACKS - (1) EVERY 100 S.F., 1 GAL. AT SLOPES
416	④	CAESALPINIA GILLIESII	BIRD OF PARADISE	
527	⑤	LANTANA SPP.	LANTANA	SMALL FLOWERING SHRUB (1'-2' HT.) (3' O.C.) 1 GAL - (1) EVERY 100 S.F. AT SLOPES
269	⑤	RAPHIOLEPSIS	PINK CLOUD	MEDIUM SHRUB (2'-3' HT.) (3' O.C.) 5 GAL. IN PARKWAY & SETBACKS - (1) EVERY 100 S.F., 1 GAL. AT SLOPES
10 FLATS		**ANNUALS:** ESCHSCHOLZIA CALIFORNICA	CALIFORNIA POPPY	FROM FLATS
		GROUND COVER: MYOPORUM PARVIFOLIUM	PROSTRATE MYOPORUM	FLATS - 12" O.C.
		HYDROSEED MIX		SEE NOTE #6

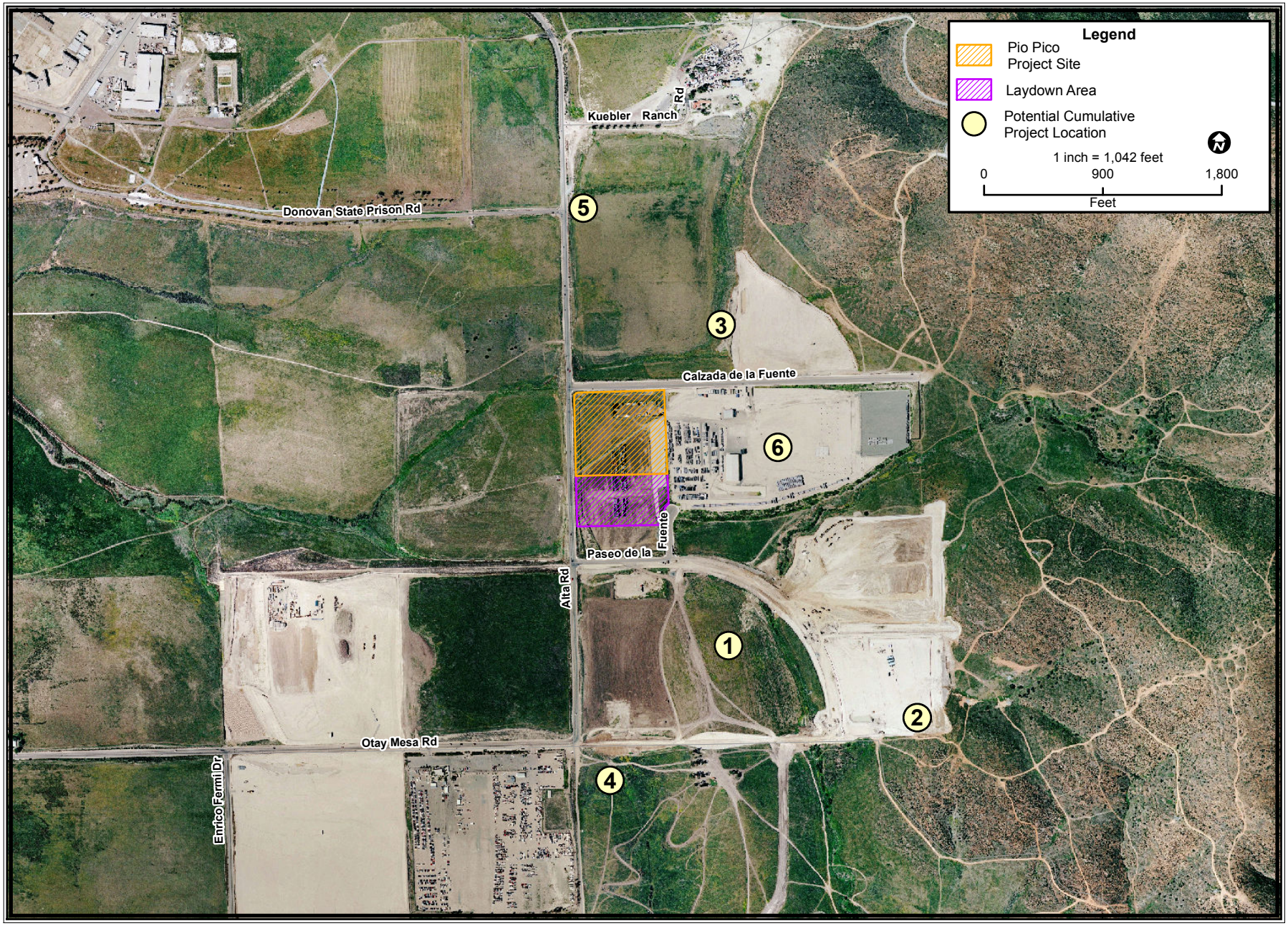
VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC KOP 4 5.13-18

VISUAL RESOURCES - FIGURE 7

Pio Pico Energy Center - Cumulative Impact Projects



CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Digital Globe & URS Corporation.

WASTE MANAGEMENT

Ellie Townsend-Hough, REA

SUMMARY OF CONCLUSIONS

Management of the nonhazardous and hazardous waste generated during construction and operation of the Pio Pico Energy Center (PPEC) would not result in any significant adverse impacts, and would comply with applicable waste management laws, ordinances, regulations, and standards, provided that the measures proposed in the Application for Certification and staff's proposed conditions of certification are implemented.

INTRODUCTION

This Preliminary Staff Assessment (PSA) presents an analysis of issues associated with wastes generated from the proposed construction and operation of the PPEC. The technical scope of this analysis encompasses solid wastes generated during facility construction and operation. Management and discharge of wastewater is addressed in the **Soil and Water Resources** section of this document. Additional information related to waste management may also be covered in the **Worker Safety** and **Hazardous Materials Management** sections of this document.

The objectives of the Energy Commission staff's waste management analysis are to ensure that:

- The management of project wastes would be in compliance with all applicable laws, ordinances, regulations, and standards (LORS). Compliance with LORS ensures that wastes generated during the construction and operation of the proposed project would be managed in an environmentally safe manner.
- The disposal of project wastes would not result in significant adverse impacts to existing waste disposal facilities.
- Upon project completion, the site is managed in such a way that project wastes and waste constituents would not pose a significant risk to humans or the environment.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The following federal, state, and local environmental laws, ordinances, regulations, and standards have been established to ensure the safe and proper management of both solid and hazardous wastes in order to protect human health and the environment. Project compliance with the various LORS is a major component of staff's determination regarding the significance and acceptability of the PPEC with respect to management of waste.

WASTE MANAGEMENT Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
Federal	
Title 42, United States Code, §§ 6901, et seq. Solid Waste Disposal Act of 1965 (as amended and revised by the Resource Conservation and Recovery Act of 1976, et al.)	The Solid Waste Disposal Act, as amended and revised by the Resource Conservation and Recovery Act (RCRA) et al., establishes requirements for the management of solid wastes (including hazardous wastes), landfills, underground storage tanks, and certain medical wastes. The statute also addresses program administration, implementation, and delegation to states, enforcement provisions, and responsibilities, as well as research, training, and grant funding provisions. RCRA Subtitle C establishes provisions for the generation, storage, treatment, and disposal of hazardous waste, including requirements addressing: • generator record keeping practices that identify quantities of hazardous wastes generated and their disposition; • waste labeling practices and use of appropriate containers; • use of a manifest when transporting wastes; • submission of periodic reports to the United States Environmental Protection Agency (U.S. EPA) or other authorized agency; and • corrective action to remediate releases of hazardous waste and contamination associated with RCRA-regulated facilities. RCRA Subtitle D establishes provisions for the design and operation of solid waste landfills. RCRA is administered at the federal level by U.S. EPA and its 10 regional offices. The Pacific Southwest regional office (Region 9) implements U.S. EPA programs in California, Nevada, Arizona, and Hawaii.
Title 42, United States Code, §§ 9601, et seq. Comprehensive Environmental Response, Compensation and Liability Act	The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), also known as Superfund, establishes authority and funding mechanisms for cleanup of uncontrolled or abandoned hazardous waste sites, as well as cleanup of accidents, spills, or emergency releases of pollutants and contaminants into the environment. Among other things, the statute addresses: • reporting requirements for releases of hazardous substances; • requirements for remedial action at closed or abandoned hazardous waste sites and brownfields; • liability of persons responsible for releases of hazardous substances or waste; and • requirements for property owners/potential buyers to conduct “all appropriate inquiries” into previous ownership and uses of the property to 1) determine if hazardous substances have been or may have been released at the site and 2) establish that the owner/buyer did not cause or contribute to the release. A Phase I Environmental Site Assessment is commonly used to satisfy CERCLA’s “all appropriate inquiries” requirements.
Title 40, Code of	These regulations were established by U.S. EPA to implement the

Federal Regulations (CFR), Subchapter I – Solid Wastes	provisions of the Solid Waste Disposal Act and RCRA (described above). Among other things, the regulations establish the criteria for classification of solid waste disposal facilities (landfills), hazardous waste characteristic criteria and regulatory thresholds, hazardous waste generator requirements, and requirements for management of used oil and universal wastes. • Part 246 addresses source separation for materials recovery guidelines. • Part 257 addresses the criteria for classification of solid waste disposal facilities and practices. • Part 258 addresses the criteria for municipal solid waste landfills. • Parts 260 through 279 address management of hazardous wastes, used oil, and universal wastes (i.e., batteries, mercury-containing equipment, and lamps). U.S. EPA implements the regulations at the federal level. However, California is an authorized state so the regulations are implemented by state agencies and authorized local agencies in lieu of U.S. EPA.
Title 49, CFR, Parts 172 and 173 Hazardous Materials Regulations	U.S. Department of Transportation established standards for transport of hazardous materials and hazardous wastes. The standards include requirements for labeling, packaging, and shipping of hazardous materials and hazardous wastes, as well as training requirements for personnel completing shipping papers and manifests. Section 172.205 specifically addresses use and preparation of hazardous waste manifests in accordance with Title 40, CFR, and section 262.20.
State	
California Health and Safety Code, Chapter 6.5, §§ 25100, et seq. Hazardous Waste Control Act of 1972, as amended	This California law creates the framework under which hazardous wastes must be managed in California. The law provides for the development of a state hazardous waste program that administers and implements the provisions of the federal RCRA program. It also provides for the designation of California-only hazardous wastes and development of standards (regulations) that are equal to or, in some cases, more stringent than federal requirements. The California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC) administers and implements the provisions of the law at the state level. Certified Unified Program Agencies (CUPAs) implement some elements of the law at the local level.
Title 22, California Code of Regulations (CCR), Division 4.5 Environmental Health Standards for the Management of Hazardous Waste	These regulations establish requirements for the management and disposal of hazardous waste in accordance with the provisions of the California Hazardous Waste Control Act and federal RCRA. As with the federal requirements, waste generators must determine if their wastes are hazardous according to specified characteristics or lists of wastes. Hazardous waste generators must obtain identification numbers, prepare manifests before transporting the waste off site, and use only permitted treatment, storage, and disposal facilities. Generator standards also include requirements for record keeping, reporting, packaging, and labeling. Additionally, while not a federal requirement, California requires that hazardous waste be transported by registered hazardous waste transporters.

	The standards addressed by Title 22, CCR include: • Identification and Listing of Hazardous Waste (Chapter 11, §§ 66261.1, et seq.) • Standards Applicable to Generators of Hazardous Waste (Chapter 12, §§ 66262.10, et seq.) • Standards Applicable to Transporters of Hazardous Waste (Chapter 13, §§ 66263.10, et seq.) • Standards for Universal Waste Management (Chapter 23, §§ 66273.1, et seq.) • Standards for the Management of Used Oil (Chapter 29, §§ 66279.1, et seq.) • Requirements for Units and Facilities Deemed to Have a Permit by Rule (Chapter 45, §§ 67450.1, et seq.) The Title 22 regulations are established and enforced at the state level by DTSC. Some generator standards are also enforced at the local level by CUPAs.
California Health and Safety Code, Chapter 6.11 §§ 25404–25404.9 Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program)	The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of the six environmental and emergency response programs listed below. • Aboveground Storage Tank Program • Business Plan Program • California Accidental Release Prevention (CalARP) Program • Hazardous Material Management Plan / Hazardous Material Inventory Statement Program • Hazardous Waste Generator / Tiered Permitting Program • Underground Storage Tank Program The state agencies responsible for these programs set the standards for their programs while local governments implement the standards. The local agencies implementing the Unified Program are known as CUPAs. San Diego County Department Hazardous Materials Division is the area CUPA. Note: The Waste Management analysis only considers application of the Hazardous Waste Generator/Tiered Permitting element of the Unified Program. Other elements of the Unified Program may be addressed in the **Hazardous Materials** and/or **Worker Health and Safety** analysis sections.
Title 27, CCR, Division 1, Subdivision 4, Chapter 1, §§ 15100, et seq. Unified Hazardous Waste and Hazardous Materials Management Regulatory Program	While these regulations primarily address certification and implementation of the program by the local CUPAs, the regulations do contain specific reporting requirements for businesses. • Article 9 – Unified Program Standardized Forms and Formats (§§ 15400–15410). • Article 10 – Business Reporting to CUPAs (§§ 15600–15620).

Public Resources Code, Division 30, §§ 40000, et seq. California Integrated Waste Management Act of 1989.	The California Integrated Waste Management Act of 1989 (as amended) establishes mandates and standards for management of solid waste. Among other things, the law includes provisions addressing solid waste source reduction and recycling, standards for design and construction of municipal landfills, and programs for county waste management plans and local implementation of solid waste requirements.
Title 14, CCR, Division 7, § 17200, et seq. California Integrated Waste Management Board	These regulations further implement the provisions of the California Integrated Waste Management Act and set forth minimum standards for solid waste handling and disposal. The regulations include standards for solid waste management, as well as enforcement and program administration provisions. • Chapter 3 – Minimum Standards for Solid Waste Handling and Disposal. • Chapter 3.5 – Standards for Handling and Disposal of Asbestos Containing Waste. • Chapter 7 – Special Waste Standards. • Chapter 8 – Used Oil Recycling Program. • Chapter 8.2 – Electronic Waste Recovery and Recycling.
California Health and Safety Code, Division 20, Chapter 6.5, Article 11.9, §25244.12, et seq. Hazardous Waste Source Reduction and Management Review Act of 1989 (also known as SB 14).	This law was enacted to expand the state's hazardous waste source reduction activities. Among other things, it establishes hazardous waste source reduction review, planning, and reporting requirements for businesses that routinely generate more than 12,000 kilograms (~ 26,400 pounds) of hazardous waste in a designated reporting year. The review and planning elements are required to be done on a four-year cycle, with a summary progress report due to DTSC every fourth year.
Title 22, CCR, § 67100.1 et seq. Hazardous Waste Source Reduction and Management Review.	These regulations further clarify and implement the provisions of the Hazardous Waste Source Reduction and Management Review Act of 1989 (noted above). The regulations establish the specific review elements and reporting requirements to be completed by generators subject to the act.
Title 22, CCR, Chapter 32, §67383.1 – 67383.5	This chapter establishes minimum standards for the management of all underground and aboveground tank systems that held hazardous waste or hazardous materials, and are to be disposed, reclaimed or closed in place.
Title 8, CCR §1529 and §5208	These regulations require the proper removal of asbestos containing materials in all construction work and are enforced by California Occupational Safety and Health Administration (Cal-OSHA).
Title 27, CCR , division 2, Subdivision 1, Chapter 3,	This regulation establishes that alternative daily cover (ADC) and other waste materials beneficially used at landfills constitutes diversion through recycling, and requires the California Integrated Waste Management Board to adopt regulations governing ADC.

Subchapter 4,	
California Porter-Cologne Water Quality Control Act of 1952: California Water Code, Division 7, Title 23, CCR, Division 3, Chapter 9	Requires adequate protection of water quality by appropriate design, sizing and construction of erosion and sediment controls.
Local	
Policies	
City of San Diego General Plan	Provides guidance for remediation of contaminated site and for siting and management of facilities that store, collect, treat, dispose, or transfer hazardous waste.
San Diego county Integrated Waste Management Program	Provides guidance for local management of solid waste and household hazardous waste.
County Code of Regulatory Ordinances Sections 68.508 through 68.518 Construction & Demolition (C&D) Recycling	Effective April 21, 2007, debris from construction and demolition projects must be diverted away from landfill disposal in the unincorporated County of San Diego. The ordinance requires that 90% of inerts and 70% of all other materials must be recycled from a project. In order to comply with the ordinance, applicants must submit a Construction and Demolition Debris Management Plan and a fully refundable Performance Guarantee prior to building permit issuance.

SETTING

Proposed Project

The proposed PPEC project is a 300-megawatt (MW) simple-cycle natural gas-fired peaking facility. The project would consist of three 100 MW GE LMS100 intercooled gas turbines, a gas transmission pipeline, an electrical transmission connection line, and auxiliary equipment (PPEC 2011a, page1.1-1).

The 9.99-acre project site and 6-acre laydown area are located in the unincorporated area known as Otay Mesa, in eastern San Diego County, California. Historical United States Geological Survey Topographical maps and historical aerial photographs depict the project site as undisturbed, undeveloped, vacant land. The project location was used as the laydown area for the Otay Mesa Generating Project (PPEC 2011, Appendix Q) and has subsequently been graded flat. The project is located within the Otay-Sweetwater Unit of the San Diego National Wildlife Refuge. The project is located west of the Otay Mesa Generating Project. The project is bounded by undeveloped land to the north, south, and west. The project is located on Assessor's Parcel Number (APN) 648-040-45 and the six-acre laydown area is located on APN 648-040-46 (PPEC 2011a, Appendix Q).

Construction activities associated with the PPEC project would produce a variety of mixed nonhazardous wastes, such as soil, wood, metal, concrete, etc. Waste would be recycled where practical and non-recyclable waste would be deposited in a Class III landfill. The hazardous waste generated during this phase of the project would consist of used oils, universal wastes, solvents, and empty hazardous waste materials (PPEC 2011a, § 5.14.2.1). Universal wastes are hazardous wastes that contain mercury, lead, cadmium, copper, and other substances hazardous to human and environmental health. Examples of universal wastes are batteries, fluorescent tubes, and some electronic devices.

Operation and maintenance of the project and associated facilities would generate a variety of wastes, including hazardous wastes. To control air pollutant emissions, the project's turbine units would use selective catalytic reduction and oxidation catalyst equipment and chemicals, which generate both solid and hazardous wastes (PPEC 2011a, § 5.14.2.2).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

This waste management analysis addresses: a) existing soil contamination on the project site associated with prior activities on or near the project site; and b) the impacts from the generation and management of wastes during demolition of existing structures and during project construction and operation.

a) For any site in California proposed for the construction of a power plant, the applicant must provide documentation about the nature of any potential or existing releases of hazardous substances or contamination at the site. If potential or existing releases or contamination at the site are identified, the significance of the release or contamination would be determined by site-specific factors, including, but not limited to: the amount and concentration of contaminants or contamination; the proposed use of the area where the contaminants/contamination is found; and any potential pathways for workers, the public, or sensitive species or environmental areas to be exposed to the contaminants. Any unmitigated contamination or releases of hazardous substances that pose a risk to human health or environmental receptors would be considered significant by Energy Commission staff.

   As a first step in documenting existing site conditions, the Energy Commission's power plant site certification regulations require that a Phase I Environmental Site Assessment (ESA) be prepared[1] and submitted as part of an application for certification. The Phase I ESA is conducted to identify any conditions indicative of releases or threatened releases of hazardous substances at the site and to identify any areas near the site that are known to be contaminated (or a source of contamination).

   The Phase I ESA is conducted by a qualified environmental professional. It includes inquiries into past uses and ownership of the property, former hazardous substance

[1] Title 20, California Code of Regulations, section 1704(c) and Appendix B, section (g)(12)(A). Note that the Phase I ESA must be prepared according to American Society for Testing and Materials protocol or an equivalent method agreed upon by the applicant and the Energy Commission staff.

releases and/or hazardous waste disposal at the site and within a certain distance of the site, visual inspection of the property, and making observations about the potential for contamination and possible areas of concern. After conducting all necessary file reviews, interviews, and site observations, the environmental professional provides findings about the environmental conditions at the site. In addition, since the Phase I ESA does not include sampling or testing, the environmental professional may give an opinion about the potential need for any additional investigation. Additional investigation may be needed, for example, if there were significant gaps in the information available about the site, an ongoing release is suspected, or to confirm an existing environmental condition.

If additional investigation is needed to identify the extent of possible contamination, a Phase II ESA may be required. The Phase II ESA usually includes sampling and testing of potentially contaminated media to verify the level of contamination and the potential for remediation at the site.

In conducting its assessment of a proposed project, Energy Commission staff review the project's Phase I ESA and work with the appropriate oversight agencies, as necessary, to determine if additional site characterization work is needed and if any mitigation is necessary at the site to ensure protection of human health and the environment from any hazardous substance releases or contamination identified.

b) Regarding the management of project-related wastes generated during demolition, construction and operation, staff reviews the applicant's proposed solid and hazardous waste management methods and determines if the methods proposed are consistent with the LORS identified for waste disposal and recycling. The federal, state, and local LORS represent a comprehensive regulatory system designed to protect human health and the environment from impacts associated with management of both non-hazardous and hazardous wastes. Absent any unusual circumstances, staff considers project compliance with LORS to be sufficient to ensure that no significant impacts would occur as a result of project waste management.

Staff then reviews the capacity available at off-site treatment and disposal sites and determines whether or not the proposed power plant's waste would have a significant impact on the volume of waste a facility is permitted to accept. Staff uses a waste volume threshold equal to 10 percent of a disposal facility's remaining permitted capacity to determine if the impact from disposal of project wastes at a particular facility would be significant.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Existing Site Conditions and Potential for Contamination

PPEC would be constructed in East Otay Mesa, a business park located in the southwestern portion of unincorporated San Diego County immediately north of the U.S./Mexico border. The East Otay Mesa Specific Plan sets over 2,000 acres as a modern industrial and business center while about 550 acres is set aside for conservation or very low-density residential use. The area consists of a relatively flat mesa with the steep San Ysidro Mountains on the

eastern edge and the Otay River Valley and tributary canyon to the north. Historically, the flatter portions were used for agriculture and the steeper areas were never developed (SDC 2010). The proposed PPEC project consists of two parcels: the 9.99 acre project site (APN 648-040-45) and the 6.0-acre laydown and temporary parking area (APN 648-040-46) (PPCE 2011a, Appendix Q).

The site was previously used as the laydown area for the Otay Mesa Generating Project (PPEC 2011, Appendix Q). During the spring of 2011 but after submittal of the Application for Certification (AFC) in February 2011, the industrial park developer graded the project site and adjacent laydown area[2]. A significant amount of native soil was removed from the site, resulting in a difference in ground elevation of about 25 feet lower than prior to the earthwork. This excavation has created a large slope (approximately 28 feet tall at about 40 percent slope) at the east property line. The soil removal and grading of the property were already planned prior to the inception of the Pio Pico project and would have occurred without regard to the proposed project.

The northern half of East Otay Mesa, where the PPEC site is located, falls within the Otay River watershed, which is approximately one third the area of the larger 415-square-mile San Diego Bay watershed. Major water bodies in the nearby vicinity include the Upper Otay Reservoir, formed by Upper Otay Dam, the Lower Otay Reservoir, formed by Savage Dam, and the Otay River, which ultimately discharges into the south end of San Diego Bay. The topographic flow from this portion of East Otay Mesa drains west toward Johnson Canyon then into the Otay River. The confluence between Johnson Canyon Creek and Otay River is approximately three miles downstream of Savage Dam and nine miles upstream of the San Diego Bay (Aspen 2006).

A Phase I Environmental Site Assessment (ESA) was conducted by the URS Corporation for the proposed PPEC site. The December 7, 2010 ESA report states that the assessment did not identify any recognized environmental conditions associated with the proposed project site and linear facility corridors. The assessment was completed in accordance with the American Society for Testing and Materials Standard Practice E 1527-05 for ESAs (PPEC 2011a, Appendix Q). A Recognized Environmental Concern (REC) is the presence or likely presence of any hazardous substances or petroleum products on a property under the conditions that indicate an existing release, past release, or a material threat of a release of any hazardous substance or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property.

The two major linear facilities associated with PPEC are an electrical transmission line (owned and maintained by the applicant) and a natural gas pipeline (constructed, owned, and operated by SDG&E), both would extend beyond PPEC boundaries (see **Project Description - Figure 3, Alternative Routes for Natural Gas Line**). The remaining proposed linear facilities are mainly short connections from PPEC to existing underground utilities along PPEC site boundaries that service the area (potable water pipeline, reclaimed water pipeline, stormwater pipeline, and sewer pipeline)..

[2] Grading activities were subject to 2009-2010 County of San Diego Grading Permit 2700-1555.

Although the ESA established that there were no RECs, potentially contaminated soil could be encountered during excavation activities at the project site or the linear facilities and staff is concerned that the environment and/or human health could be potentially exposed to unforeseen contaminates. Therefore, staff believes as a precaution and consistent with good engineering practice, the applicant should be required to comply with **WASTE-1** and **2.** These conditions outline detailed procedures for identification of contamination and removal of contamination from the site to ensure that remaining contaminants do not pose a threat to human health and the environment. Condition of Certification **WASTE-1** would require that prior to initiating any earthwork on the project site; the project owner shall prepare and submit to the CPM for approval, a Soils Management Plan to assure the proper handling, storage and disposal of contaminated soils. Condition of Certification **WASTE-2** would require that an experienced and qualified Professional Engineer or Professional Geologist be available for consultation during site characterization, soil grading or soil excavation to determine appropriate actions to be taken in the event contaminated soil is encountered.

Conditions of Certification **WASTE -1** and **2**, and **WORKER SAFETY-1** and **2** would require the applicant to demonstrate how the project owner would manage the excavation of the contaminated soils in order to protect human health and the environment. These conditions would ensure the potential contamination is adequately characterized and the type and extent of contamination is quantified. They would also ensure that potential contaminated soils are appropriately disposed of and managed so that worker health and safety is protected and potential environmental impacts are not exacerbated.

In the event that construction excavation, grading, or trenching activities for the proposed project encounter potentially contaminated soils that require specific handling, disposal and other precautions pursuant to hazardous waste management LORS, staff finds that proposed Conditions of Certification **WASTE-1** and **2** would be adequate to address such concerns.

Construction Impacts and Mitigation

Construction of the proposed power plant and associated facilities would last approximately 16 months and generate both nonhazardous and hazardous wastes in solid and liquid forms (PPEC 2011a, page 5.4-7). Before construction can begin, the project owner would be required to develop and implement a Construction Waste Management Plan, per proposed Condition of Certification **WASTE-3**.

Non-Hazardous Wastes

All non-hazardous wastes would be recycled to the extent possible and non-recyclable wastes would be collected by a licensed hauler and disposed in a solid waste disposal facility, in accordance with Title 14, California Code of Regulations, section 17200 et seq. Non-hazardous solid wastes generated during construction would include approximately 49 tons of scrap wood, concrete, steel/metal, paper, glass, and plastic waste (PPEC 2011a, § 5.14.2.1).

Effective April 21, 2007, debris from construction and demolition projects must be diverted away from landfill disposal in the unincorporated County of San Diego. The ordinance requires that 90 percent of inerts and 70 percent of all other materials must be recycled from a project. This Ordinance applies to construction, demolition, or renovation projects, 40,000

square feet or greater in the unincorporated county of San Diego. In order to comply with the ordinance, applicants must submit a Debris Management Plan and a fully refundable Performance Guarantee prior to building permit issuance. (Sections 68.508 through 68.518 of the County Code of Regulatory Ordinances). The Debris Management Plan and the Construction and Demolition Recycling Guide (provided by San Diego County) help determine where project materials will be recycled during the process. Recovering or recycling project debris will reduce the amount of debris related to a project that is buried in a landfill.

Adoption of Condition of Certification **WASTE-4** would ensure that the PPEC Project owner complies with the county's Construction and Demolition Debris Recycling and Reuse Program Ordinance, (Sections 68.508 through 68.518 of the County Code of Regulatory Ordinances). Staff believes that compliance with proposed Condition of Certification **WASTE-4** would further reduce potential impacts to local landfills from project wastes.

Non-hazardous liquid wastes would also be generated during construction, including sanitary wastes, dust suppression drainage, and equipment wash water. Sanitary wastes would be collected in portable, self-contained toilets and pumped periodically for disposal at an appropriate facility. Potentially contaminated equipment wash water will be contained at designated wash areas and transported to a sanitary wastewater treatment facility (see the **Soil and Water Resources** section of this document for more information on the management of project wastewater).

Hazardous Wastes

Hazardous wastes that would likely be generated during construction include solvents, waste paint, oil absorbents, used oil, oily rags, batteries, cleaning wastes, spent welding materials, and empty hazardous material containers (PPEC 2011a, Table 5.14-2). Approximately 1,525 gallons of hazardous wastes could be generated during construction.

The project owner would be required to obtain a unique hazardous waste generator identification number for the site prior to starting construction, pursuant to proposed Condition of Certification **WASTE-5.** Although the hazardous waste generator number is determined based on site location, both the construction contractor and the project owner/operator could be considered the generator of hazardous wastes at the site. The majority of the hazardous waste will be recycled.

The generation of hazardous wastes anticipated during construction also includes empty hazardous material containers, solvents, waste paint, oil absorbents, used oil, oily rags, batteries, and cleaning wastes. The amount of waste generated would be minor if handled in the manner identified in the AFC (PPEC 2011a, § 5.14.2.2). Hazardous waste generators must obtain identification numbers, prepare manifests before transporting the waste off site, and use only permitted treatment, storage, and disposal facilities in accordance with Title 22, CCR, Division 4.5, Chapter 12, and Section 66262.12.

Absent any unusual circumstances, staff considers project compliance with LORS to be sufficient to ensure that no significant impacts would occur as a result of project waste management activities.

Operation Impacts and Mitigation

The proposed PPEC would generate non-hazardous and hazardous wastes in both solid and liquid forms under normal operating conditions. Table 5.14-3 of the project AFC gives a summary of the operation waste streams, expected waste volumes and generation frequency, and management methods proposed. Before operations can begin, the project owner would be required to develop and implement an Operation Waste Management Plan pursuant to proposed Condition of Certification **WASTE-6**.

Non-Hazardous Solid Wastes

Operation of the project is expected to generate less than five tons per year of non-hazardous solid wastes including wet surface air coolers basin sludge. This would include routine maintenance wastes (such as used air filters, spent deionization resins, sand and filter media) as well as domestic and office wastes (such as office paper, newsprint, aluminum cans, plastic, and glass). All non-hazardous wastes would be recycled, to the extent possible, and non-recyclable wastes would be regularly transported off site to a local solid waste disposal facility (PPEC 2011a, § 5.14.2.2).

Non-Hazardous Liquid Wastes

Non-hazardous liquid wastes would be generated during facility operation and are discussed in the **Soil and Water Resources** section of this document.

Hazardous Wastes

The project owner/operator would be considered the generator of hazardous liquid wastes at the site during facility operations. Therefore, the project owner's unique hazardous waste generator identification number, obtained prior to construction in accordance with proposed Condition of Certification **WASTE-5**, would be retained and used for the management of hazardous liquid wastes generated during facility operation.

The generation of hazardous liquid wastes expected during routine project operation includes used hydraulic fluids, oils, greases, oily filters and rags, spent selective catalytic reduction catalysts, cleaning solutions and solvents, and batteries. In addition, spills and unauthorized releases of hazardous liquid materials or hazardous wastes may generate contaminated soils or materials that may require corrective action and management as hazardous waste. Proper hazardous materials handling and good housekeeping practices would help keep spilled wastes to a minimum. However, to ensure proper cleanup and management of any contaminated soils or waste materials generated from hazardous materials spills, staff proposes Condition of Certification **WASTE-7**, which would require the project owner/operator to report, clean up, and remediate as necessary, any hazardous materials spills or releases in accordance with all applicable federal, state, and local requirements. More information on hazardous material management, spill reporting, containment, and spill control and countermeasures plan provisions for the project are provided in the **Hazardous Materials Management** section of the PSA.

Less than two tons per year of hazardous wastes would be generated during the 20-year anticipated operation of the PPEC facility, with source reduction and recycling of wastes implemented whenever possible. The hazardous wastes would be temporarily stored on site,

transported off site by licensed hazardous waste haulers, and recycled or disposed of at authorized disposal facilities in accordance with established standards applicable to generators of hazardous waste (Title 22, CCR, §§ 66262.10 et seq.). Should any operations waste management-related enforcement action be taken or initiated by a regulatory agency, the project owner would be required by proposed Condition of Certification **WASTE-8** to notify the CPM whenever the owner becomes aware of any such action.

Impact on Existing Waste Disposal Facilities

Non-Hazardous Wastes

During construction of the proposed project, approximately 25 cubic yards of solid waste, and less than 10 cubic yards per year of operation waste would be generated and recycled or disposed of in a Class II or III landfill (PPEC 2011a, Table 5.14-3).

WASTE MANAGEMENT Table 2 presents details of six non-hazardous (Class III) waste disposal facilities that could potentially take the non-hazardous construction and operation wastes generated by the PPEC project facility. These Class III landfills are located in San Diego County. The remaining capacity for the four landfills combined is over 97 million cubic yards. The total amount of non-hazardous waste generated from project construction and operation would contribute less than one percent of the available landfill capacity. Staff finds that disposal of the solid wastes generated by PPEC facility can occur without significantly impacting the capacity or remaining life of any of these facilities.

Hazardous Wastes

WASTE MANAGEMENT Table 2 displays information on the two Class I landfills in California: the Buttonwillow Landfill in Kern County, and the Kettleman Hills Landfill in King's County. The Kettleman Hills facility also accepts Class II and Class III wastes. Kettleman Hills and Buttonwillow landfills have a combined excess of 10 million cubic yards of remaining hazardous waste disposal capacity, with up to 33 years of remaining operating lifetimes (PPEC 2011a, page 5.14-.3).

Hazardous wastes generated during construction and operation would be recycled to the extent possible and practical. Those wastes that cannot be recycled would be transported off site to a permitted treatment, storage, or disposal facility. Approximately 220 cubic yards of construction hazardous waste, and less than 10 cubic yards per year of operation hazardous waste would be generated from the PPEC facility. The total amount of hazardous wastes generated by the PPEC Project would consume less than 0.02 percent of the remaining permitted capacity. Therefore, impacts from disposal of PPEC generated hazardous wastes would also have a less than significant impact on the remaining capacity at Class I landfills.

WASTE MANAGEMENT Table 2
Waste Recycling/Disposal Facilities

Waste Disposal Site	Title 23 Class	Remaining Capacity	Estimated Closure Date
Otay Landfill 1700 Maxwell Road Chula Vista, CA 91911	Class III	33.1 million cubic yards	2021
Sycamore Sanitary Landfill 8514 Mast Boulevard San Diego, CA 92071	Class III	47.1 million cubic yards	2031
Borego Landfill 2449 Palm Canyon Road Borrego Springs, CA 92004	Class III	0.5 million cubic yards	2021
West Miramar Sanitary Landfill 5180 Convoy Street San Diego CA 92123	Class III	16.5 million cubic yards	2017
Clean Harbors Buttonwilliow Landfill Lokern Road Kern County, CA	Class I	9.2 million cubic yards*	2040
Chemical Waste Management Kettleman Hills Landfill 36251 Old Skyline Road Kettleman City, CA 93239	Class I, Class II, and Class III	1.9 million cubic yards*	Not Available

Source: Pio Pico AFC Table 5.14-1
*Information obtained from CalRecycle website and staff.

CUMULATIVE IMPACTS AND MITIGATION

The CEQA Guidelines (Section 15355) define cumulative effects as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.”

The proposed project would not make a significant contribution to regional impacts related to new development and growth. The project is planned to serve the existing and anticipated electrical needs of the region by connecting to the existing electric transmission system and other utility infrastructure. The waste management impacts of the proposed project, in combination with past, present and reasonably foreseeable projects in the area would not be cumulatively considerable.

As proposed, the amount of non-hazardous and hazardous wastes generated during construction and operation of the PPEC facility would add to the total quantity of waste generated in the State of California. Project non-hazardous wastes would be generated in modest quantities, approximately 25 cubic yards during construction, and less than 10 cubic

yards per year during operation [3] (PPEC 2011a). 220 cubic yards of hazardous waste would be generated during construction, and less than ten cubic yards per year would be generated during operation. Waste recycling would be employed wherever practical, and sufficient capacity is available at several treatment and disposal facilities to handle the volumes of wastes that would be generated by the project. The four Class III landfills listed in the Table 2 have a remaining capacity of 97.8 million cubic yards. Table 2 also shows that approximately 10 million cubic yards of landfill capacity is available in the Class I landfills. CalRecycle reports solid waste disposal in San Diego County as 2,990,444 tons in 2009. The proposed PPEC facility's contribution is insignificant and would be less than one percent of the county's waste generation. No projects have been identified in the project vicinity that would create significant cumulative waste management impacts when considered together with PPEC. Therefore, staff concludes that the waste generated by the PPEC would not result in significant cumulative waste management impacts.

COMPLIANCE WITH LORS

Energy Commission staff concludes that the proposed PPEC facility would comply with all applicable LORS regulating the management of hazardous and non-hazardous wastes during both facility construction and operation. The applicant is required to recycle and/or dispose hazardous and non-hazardous wastes at facilities licensed or otherwise approved to accept the wastes. Because hazardous wastes would be produced during both project construction and operation, the PPEC facility would be required to obtain a hazardous waste generator identification number from U.S. EPA. The PPEC facility would also be required to properly store, package, and label all hazardous waste; use only approved transporters; prepare hazardous waste manifests; keep detailed records; and appropriately train employees, in accordance with state and federal hazardous waste management requirements.

In the **Socioeconomics** section of this staff assessment, staff presents census information that shows that there are minority populations within one mile and six miles of the project. Since staff has added conditions of certification that would reduce the risk associated with hazardous waste to a less than significant level, staff concludes that there will be no significant impact from construction or operation of PPEC on minority populations. Therefore, there are no environmental justice issues for Waste Management.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Staff received comments from the Department of Toxic Substance Control (DTSC) (DTSC 2011a). DTSC provided staff with a memorandum outlining eleven steps that would be necessary for safe construction and operation of PPEC (DTSC 2011a). In the memorandum DTSC provided comments that required PPEC to supply documentation on the information that would normally be included in a Phase I and/or Phase II ESA (DTSC 2011a). Staff believes the Phase I ESA located in Appendix Q of the AFC address the DTSC's comments.

[3] The cubic yards are staff generated numbers based on approximately 2,000 pounds per ton (PPEC Tables 5.14-2 and Table 5.14-3). Staff used 202 gallons per cubic yard, and sludge 50 lbs per cubic foot as conversion factors for waste conversions, source was http://www.calrecycle.ca.gov/lgcentral/library/dsg/apndxi.htm

CONCLUSIONS

Consistent with the three main objectives for staff's waste management analysis (as noted in the Introduction section of this analysis), staff provides the following conclusions:

1) Based on its review of the applicant's proposed waste management procedures, staff concludes that project wastes would be managed in compliance with all applicable waste management LORS. Staff notes that both construction and operation wastes would be characterized and managed as either hazardous or non-hazardous waste. All non-hazardous wastes would be recycled to the extent feasible, and non-recyclable wastes would be collected by a licensed hauler and disposed of at a permitted solid waste disposal facility. Hazardous wastes would be accumulated onsite in accordance with accumulation time limits (90,180, 270, or 365 days depending on waste type and volumes generated), and then properly manifested, transported to, and disposed of at a permitted hazardous waste management facility by licensed hazardous waste collection and disposal companies.

   However, to help ensure and facilitate ongoing project compliance with LORS, staff proposes Conditions of Certification **WASTE-1** through **8**. These conditions would require the project owner to do all of the following:

   - Ensure the project site is investigated and any contamination identified is remediated, as necessary, with appropriate professional and regulatory agency oversight (**WASTE-1**, **2**, and **3**).
   - Comply with local waste recycling and diversion requirements (**WASTE-4**).
   - Obtain a hazardous waste generator identification number (**WASTE-5**).
   - Prepare a Construction Waste Management Plan and an Operation Waste Management Plan that detail the types and volumes of wastes to be generated and how wastes would be managed, recycled, and/or disposed of after generation (**WASTE-3** and **6**).
   - Ensure that all spills or releases of hazardous substances are reported and cleaned up in accordance with all applicable federal, state, and local requirements (**WASTE-7**
   - Report any waste management-related LORS enforcement actions and how violations would be corrected (**WASTE-8**).

2) Although the ESA established that there were no RECs, potentially contaminated soil could be encountered during excavation activities at the project site or the linear facilities and staff is concerned that the environment and/or human health could be potentially exposed to unforeseen contaminates. To ensure that the project site is investigated and remediated, as necessary, and to reduce any impacts from prior or future hazardous substance or hazardous waste releases at the site to a level of insignificance, staff proposes Conditions of Certification **WASTE-1**, **2**, **3**, **4**, **6**, and **8**. These conditions would require the project owner to ensure that the project site is investigated and remediated as necessary; demonstrate that project wastes are managed properly; and ensure that any future spills or releases of hazardous substances or wastes are properly reported, cleaned up, and remediated as necessary. Therefore, staff concludes that construction

and operation of the proposed PPEC project would not result in contamination or releases of hazardous substances that would pose a substantial risk to human health or the environment.

3) Regarding impacts of project wastes on existing waste disposal facilities, staff uses a waste volume threshold equal to ten (10) percent of a disposal facility's remaining capacity to determine if the impact from disposal of project wastes at a particular facility would be significant. The existing available capacity for the three Class III landfills that may be used to manage nonhazardous project wastes exceeds 87 million cubic yards. The total amount of nonhazardous wastes generated from construction and operation of the proposed PPEC project would consume less than 0.1 percent of the remaining landfill capacity. Therefore, disposal of project generated non-hazardous wastes would have a less than significant impact on Class III landfill capacity.

In addition, the two Class I disposal facilities that could be used for hazardous wastes generated by the construction and operation of the PPEC project have a combined remaining capacity in excess of 10 million cubic yards. The total amount of hazardous wastes generated by the PPEC project would consume less than 0.02 percent of the remaining permitted capacity. Therefore, impacts from disposal of PPEC generated hazardous wastes would also have a less than significant impact on the remaining capacity at Class I landfills.

PROPOSED CONDITIONS OF CERTIFICATION

WASTE-1 Prior to construction on the project site, the project owner shall prepare and submit to the CPM for approval, a Soils Management Plan (SMP). The SMP should include but is not limited to the following:

• Land use history, including description and locations of known contamination;

• An earthwork schedule;

• The project owner shall describe methods which will be used to properly handle and/or dispose of soil which may be classified as hazardous or contain contaminants at levels of potential concern, including the identification of legal discharge areas;

• The SMP shall discuss, as necessary, the reuse of soil on site in accordance with applicable criteria to protect construction workers or future workers on site;

• A SMP summary report, which includes all analytical data and other findings, must be submitted once the earthwork has been completed.

Verification: At least 60 days prior to any earthwork, including those earthwork activities associated with the site mobilization, ground disturbance, or grading as defined in the general conditions of certification, the project owner shall submit the Soils Management Plan to the to the CPM for approval.

WASTE-2 The project owner shall provide the resume of an experienced and qualified professional engineer or professional geologist, who shall be available for consultation during site characterization (if needed), excavation, and grading activities, to the CPM for review and approval. The resume shall show experience in remedial investigation and feasibility studies.

The professional engineer or professional geologist shall be given full authority by the project owner to oversee any earth moving activities that have the potential to disturb contaminated soil, and to determine appropriate actions to be taken.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit the resume to the CPM for review and approval.

WASTE-3 The project owner shall prepare a Construction Waste Management Plan for all wastes generated during construction of the facility and shall submit the plan to the CPM for review and approval. The plan shall contain, at a minimum, the following:

- a description of all construction waste streams, including projections of frequency, amounts generated, and hazard classifications; and
- management methods to be used for each waste stream, including temporary on-site storage, housekeeping and best management practices to be employed, treatment methods and companies providing treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans.

Verification: The project owner shall submit the Construction Waste Management Plan to the CPM for approval no less than 30 days prior to the initiation of construction activities at the site.

WASTE-4 The project owner shall provide a Debris Management Plan demonstrating how they will divert at least 90 percent of all soil, rock and gravel, and at least 70 percent of all construction (C & D) debris, excluding inert material, to the San Diego County Department of Public Works per Section 68.508 through 68.518 of San Diego County Code of Regulatory Ordinances. The project owner shall ensure compliance with all of the county of San Diego diversion program requirements and shall provide proof of compliance documentation to the county of San Diego and the CPM, including a Debris Management Plan, receipts, and records of measurement, consistent with the county of San Diego normal reporting requirements.

Verification: Prior to the start of any construction activities, the project owner shall submit to the San Diego County Department of Public Works (SDCDPW) documentation consistent with the requirements of the County's C& D Recycling Program and provide a Debris Management Plan, along with the normally required deposit and administrative fees. At least 60 days prior to the start of any construction activities, the project owner shall submit the proposed C & D Debris Management Plan to the county and CPM for review. The project

owner must recycle 90 percent of inert material and 70 percent of other materials .No later than 180 days after completion of project construction, the project owner shall submit a Final Debris Management Plan along with all necessary receipts and records of measurement from entities receiving project wastes to the county and CPM for review and approval.

WASTE-5 The project owner shall obtain a hazardous waste generator identification number from the United States Environmental Protection Agency prior to generating any hazardous waste during construction and operations.

Verification: Prior to generating any hazardous waste during construction and operations, the project owner shall obtain a hazardous waste generator identification number and shall then keep a copy of the identification number on file at the project site. The project owner shall provide documentation of the hazardous waste generation and notification and receipt of the number to the CPM in the next scheduled Monthly Compliance Report after receipt of the number. Submittal of the notification and issued number documentation to the CPM is only needed once unless there is a change in ownership, operation, waste generation, or waste characteristics that requires a new notification to USEPA. Documentation of any new or revised hazardous waste generation notifications or changes in identification number shall be provided to the CPM in the next scheduled compliance report.

WASTE-6 The project owner shall prepare an Operation Waste Management Plan for all wastes generated during operation of the facility and shall submit the plan to the CPM for review and approval. The plan shall contain, at a minimum, the following:

- a detailed description of all operation and maintenance waste streams, including projections of amounts to be generated, frequency of generation, and waste hazard classifications;
- management methods to be used for each waste stream, including temporary on-site storage, housekeeping and best management practices to be employed, treatment methods and companies providing treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans;
- Information and summary records of conversations with the local Certified Unified Program Agency and the Department of Toxic Substances Control regarding any waste management requirements necessary for project activities. Copies of all required waste management permits, notices, and/or authorizations shall be included in the plan and updated as necessary;
- a detailed description of how facility wastes will be managed and any contingency plans to be employed in the event of an unplanned closure or planned temporary facility closure; and
- A detailed description of how facility wastes will be managed and disposed of upon closure of the facility.
- The project owner shall also document in each Annual Compliance Report the actual volume of wastes generated and the waste management methods

used during the year; provide a comparison of the actual waste generation and management methods used to those proposed in the original Operation Waste Management Plan; and update the Operation Waste Management Plan, as necessary, to address current waste generation and management practices.

Verification: The project owner shall submit the Operation Waste Management Plan to the CPM for approval no less than 30 days prior to the start of project operation. The project owner shall submit any required revisions to the CPM within 20 days of notification from the CPM that revisions are necessary.

WASTE-7 The project owner shall ensure that all spills or releases of hazardous substances, hazardous materials, or hazardous waste are documented and cleaned up and that wastes generated from the release/spill are properly managed and disposed of, in accordance with all applicable federal, state, and local requirements. The project owner shall document management of all unauthorized releases and spills of hazardous substances, hazardous materials, or hazardous wastes that are in excess of EPA's reportable quantities (RQ), that occur on the project property or related linear facilities during construction and on the property during operation. The documentation shall include, at a minimum, the following information: location of release; date and time of release; reason for release; volume released; how release was managed and material cleaned up; amount of contaminated soil and/or cleanup wastes generated; if the release was reported; to whom the release was reported; release corrective action and cleanup requirements placed by regulating agencies; level of cleanup achieved and actions taken to prevent a similar release or spill; and disposition of any hazardous wastes and/or contaminated soils and materials that may have been generated by the release.

Verification: A copy of the unauthorized release/spill documentation shall be provided to the CPM within 30 days of the date the release was discovered.

WASTE-8 Upon becoming aware of any impending waste management-related enforcement action by any local, state, or federal authority, the project owner shall notify the CPM of any such action taken or proposed to be taken against the project itself, or against any waste hauler or disposal facility or treatment operator with which the owner contracts.

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

REFERENCES

Aspen 2006 – Aspen Environmental Group. Otay River Watershed Management Plan. Prepared for Otay River Watershed Management Plan, Joint Exercise of Powers Agreement Public Agencies, May 2006.

DTSC 2011a – Department of Toxic Substances Control / G. Holmes (tn 60397). Department of Toxic Substances Control Comment Letter Regarding Hazardous Waste, dated March 18, 2011. Submitted to CEC/Docket Unit on April 25, 2011.

PPEC 2011a – Pio Pico Energy Center, LLC / G. Chandler (tn 59646). Application for Certification Volume 1 & 2, dated February 9, 2011. Submitted to CEC/Docket Unit on February 9, 2011.

Rubio 2011 – Conversation between Inspector Mario Rubio, San Diego County, and Ellie Townsend Hough, CEC, July 26, 2011 concerning the site grading at the Pio Pico proposed project site.

SDC 2010 – County of San Diego Department of Planning and Land Use. East Otay Mesa Specific Plan Amendment, 2010 Combined Plan (SPA 10-001). Approved September 15, 2010.

WORKER SAFETY AND FIRE PROTECTION

Rick Tyler and Geoff Lesh P.E.

SUMMARY OF CONCLUSIONS

Staff concludes that the proposed Pio Pico Energy Center (PPEC) project would ensure adequate levels of industrial safety and comply with applicable laws, ordinances, regulations, and standards (LORS) provided that the project provides a Project Construction Safety and Health Program and a Project Operations and Maintenance Safety and Health Program, as required by Conditions of Certification **WORKER SAFETY-1** and **-2** and fulfils the requirements of **WORKER SAFETY-3** through**-5**,. The proposed conditions of certification provide assurance that the Construction Safety and Health Program and the Operations and Maintenance Safety and Health Program proposed by the applicant will be reviewed by the appropriate agencies before implementation. The conditions also require verification that the proposed plans adequately assure worker safety and fire protection and comply with applicable laws, ordinances, regulations, and standards.

Staff also concludes that incidents at power plants that require fire or Emergency Medical Services (EMS) response are infrequent and thus would not result in significant impacts on the local fire department. Given the tax rvenue associated with the proposed facility and the lack of unique fire hazards associated with a modern gas-fired power plant, and that incidents at power plants that require fire or EMS response are infrequent, staff finds that this project will not have a significant adverse cumulative impact on the San Diego Rural Fire Protection District's ability to respond to a fire or medical emergency.

INTRODUCTION

Worker safety and fire protection is regulated through LORS at the federal, state, and local levels. Industrial workers at the facility operate equipment and handle hazardous materials daily and may face hazards that can result in accidents and serious injury. Protection measures are employed to eliminate or reduce these hazards or to minimize the risk through special training, and the use of protective equipment and procedural controls.

The purpose of this Staff Assessment is to assess the worker safety and fire protection measures proposed by the PPEC project and to determine whether the applicant has proposed adequate measures to:

- comply with applicable safety LORS;
- protect the workers during construction and operation of the facility;
- protect against fire; and
- provide adequate emergency response procedures.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Worker Safety and Fire Protection Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
Federal	
29 U.S. Code § 651 et seq (Occupational Safety and Health Act of 1970)	This act mandates safety requirements in the workplace with the purpose of "[assuring] so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources" (29 USC § 651).
29 CFR sections 1910.1 to 1910.1500 (Occupational Safety and Health Administration Safety and Health Regulations)	These sections define the procedures for promulgating regulations and conducting inspections to implement and enforce safety and health procedures to protect workers, particularly in the industrial sector.
29 CFR sections 1952.170 to 1952.175	These sections provide federal approval of California's plan for enforcement of its own safety and health requirements, in lieu of most of the federal requirements found in 29 CFR §§1910.1 to 1910.1500.
State	
8 CCR all applicable sections (Cal/OSHA regulations)	Requires that all employers follow these regulations as they pertain to the work involved. This includes regulations pertaining to safety matters during construction, commissioning, and operations of power plants, as well as safety around electrical components; fire safety; and hazardous materials use, storage, and handling.
24 CCR section 3, et seq.	Incorporates the current addition of the California Building Code.
Health and Safety Code section 25500, et seq.	Risk Management Plan requirements for threshold quantity of listed acutely hazardous materials at a facility.
Health and Safety Code sections 25500 to 25541	Requires a Hazardous Material Business Plan detailing emergency response plans for hazardous materials emergency at a facility.
Local (or locally enforced)	
2010 Edition of California Fire Code and all applicable NFPA standards (24 CCR Part 9)	National Fire Protection Association (NFPA) standards are incorporated into the California Fire Code. The fire code contains general provisions for fire safety, including road and building access, water supplies, fire protection and life safety systems, fire-resistive construction, storage of combustible materials, exits and emergency escapes, and fire alarm systems.
County of San Diego Department of Environmental Health (DEH) Hazardous Materials Division (HMD)	Requires new/modified businesses to complete a Hazardous Materials Business Plan and Chemical Inventory Forms when handling hazardous materials in excess of threshold quantities.

SETTING

The PPEC would be located in an industrial area of San Diego County adjacent to the existing Otay Mesa Generating Project. The San Diego Rural Fire Protection District (RFPD) would be the first responder for a fire or hazardous materials incidents. The first response would be provided by Fire Station 22 at 446 Alta Road. Staff concludes that the available local fire and hazmat resources are sufficient for responding to a fire of hazardous materials emergency call from the PPEC project site with an adequate response time.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD FOR DETERMINING SIGNIFICANCE

Two issues are assessed in Worker Safety and Fire Protection:

A. The potential for impacts on the safety of workers during demolition, construction, and operations activities, and

B. Fire prevention/protection, emergency medical response, and hazardous materials spill response during demolition, construction, and operations.

Worker safety issues are thoroughly addressed by California Division of Occupational Safety and Health (Cal-OSHA) regulations. If all LORS are followed, workers will be adequately protected. Thus, the standard for staff's review and determination of significant impacts on workers is whether or not the applicant has demonstrated adequate knowledge about and dedication to implementing all pertinent and relevant Cal-OSHA standards.

Regarding fire prevention matters, staff reviews and evaluates the on-site fire-fighting systems proposed by the applicant and the time needed for off-site local fire departments to respond to a fire, medical, or hazardous material emergency at the proposed power plant site. If on-site systems do not follow established codes and industry standards, staff recommends additional measures. Staff also determines if the fire protection resource are adequate to respond to the needs of a power plant and if the presence of the power plant would cause a significant impact on a local fire department. If impacts are identified, staff recommends that the applicant mitigate this impact by providing increased resources to the fire department. Because the proposed facility is located area where large power plants already exist which pose similar hazards staff concludes that the resources of the RFPD are capable of responding effectively to events at the proposed facility.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Worker Safety

Industrial environments are potentially dangerous during construction and operation of facilities. Workers at the proposed PPEC project would be exposed to loud noises, moving equipment, trenches, and confined space entry and egress problems. The workers may experience falls, trips, burns, lacerations, and numerous other injuries. They have the potential to be exposed to falling equipment or structures, chemical

spills, hazardous waste, fires, explosions, and electrical sparks and electrocution. It is important for the PPEC project to have well-defined policies and procedures, training, and hazard recognition and control at its facility to minimize such hazards and protect workers. If the facility complies with all LORS, workers will be adequately protected from health and safety hazards.

A Safety and Health Program will be prepared by the applicant to minimize worker hazards during construction and operation. Staff uses the phrase “Safety and Health Program” to refer to the measures that will be taken to ensure compliance with the applicable LORS during the construction and operational phases of the project.

Construction Safety and Health Program

The PPEC project encompasses construction and operation of a natural gas-fired cogeneration facility. Workers will be exposed to hazards typical of construction and operation of a gas-fired cogeneration facility as noted in the required programs below:

Construction Safety Orders are published in 8 CCR sections 1502, et seq. These requirements are promulgated by Cal/OSHA and are applicable to the construction phase of the project. The Construction Safety and Health Program will include the following:

- Construction Injury and Illness Prevention Program (8 CCR § 1509);
- Construction Fire Prevention Plan (8 CCR § 1920);
- Personal Protective Equipment Program (8 CCR §§ 1514 to 1522); and
- Emergency Action Program and Plan.

Additional programs under General Industry Safety Orders (8 CCR §§ 3200 to 6184), Electrical Safety Orders (8 CCR §§2299 to 2974) and Unfired Pressure Vessel Safety Orders (8 CCR §§ 450 to 544) will include:

- Electrical Safety Program;
- Motor Vehicle and Heavy Equipment Safety Program;
- Forklift Operation Program;
- Excavation/Trenching Program;
- Fall Protection Program;
- Scaffolding/Ladder Safety Program;
- Articulating Boom Platforms Program;
- Crane and Material Handling Program;
- Housekeeping and Material Handling and Storage Program;
- Respiratory Protection Program;
- Employee Exposure Monitoring Program;
- Hand and Portable Power Tool Safety Program;

- Hearing Conservation Program;
- Back Injury Prevention Program;
- Hazard Communication Program;
- Heat and Cold Stress Monitoring and Control Program;
- Pressure Vessel and Pipeline Safety Program;
- Hazardous Waste Program;
- Hot Work Safety Program; and
- Permit-Required Confined Space Entry Program.

The Application for Certification (AFC) includes an adequate outline of the Construction Health & Safety Program (PPEC 2011a). Staff proposes that prior to the start of construction of the PPEC project, detailed programs and plans be provided to the California Energy Commission Compliance Project Manager (CPM) pursuant to the Condition of Certification **WORKER SAFETY-1**.

Operations and Maintenance Safety and Health Program

Prior to the start of operations of the PPEC project, the Operations and Maintenance Safety and Health Program will be prepared. This operational safety program will include the following programs and plans:

- Injury and Illness Prevention Program (8 CCR § 3203);
- Fire Protection and Prevention Program (8 CCR § 3221);
- Personal Protective Equipment Program (8 CCR §§ 3401 to 3411); and
- Emergency Action Plan (8 CCR § 3220).

In addition, the requirements under General Industry Safety Orders (8 CCR §§ 3200 to 6184), Electrical Safety Orders (8 CCR §§ 2299 to 2974), and Unfired Pressure Vessel Safety Orders (8 CCR §§ 450 to 544) will be applicable to the project. Written safety programs for the PPEC project, which the applicant will develop, will ensure compliance with the above-mentioned requirements.

The AFC includes adequate outlines of the Injury and Illness Prevention Program, Personal Protective Equipment Program, Emergency Action Plan, and Fire Protection and Prevention Program (PPEC 2011a). Staff proposes that prior to operation of the PPEC project, all detailed programs and plans be provided to and approved by the CPM pursuant to Condition of Certification **WORKER SAFETY-2**.

Safety and Health Program Elements

As mentioned above, the applicant provided the proposed outlines for both a Construction Safety and Health Program and an Operations Safety and Health Program. The measures in these plans are derived from applicable sections of state and federal law. The major items required in both safety and health programs are as follows:

Injury and Illness Prevention Program

The Injury and Illness Prevention Program (IIPP) will include the following components as presented in the AFC (PPEC 2011a):

- identity of person(s) with authority and responsibility for implementing the program;
- a system for ensuring that employees comply with safe and healthy work practices;
- system for ensuring that employees comply with safe and healthy work practices;
- system for facilitating employer-employee communications;
- procedures for identifying and evaluating workplace hazards and developing necessary program(s);
- methods for correcting unhealthy/unsafe conditions in a timely manner;
- training and instruction; and
- methods of documenting inspections and training and maintaining records for 3 years.

Fire Prevention Plan

California Code of Regulations requires an Operations Fire Prevention Plan (8 CCR § 3221). The AFC outlines a proposed Fire Prevention Plan which is acceptable to staff (PPEC 2011a). The plan will accomplish the following actions:

- identity of persons responsible for maintaining equipment and accumulation of flammable or combustible material control;
- procedures in the event of a fire;
- fire alarm and protection equipment;
- system and equipment maintenance;
- monthly inspections;
- annual inspections;
- firefighting demonstrations;
- housekeeping practices; and
- training.

Staff proposes that the applicant submit a Fire Prevention Plan to the CPM for review and approval to satisfy proposed Conditions of Certification **WORKER SAFETY-1** and **WORKER SAFETY-2**.

Personal Protective Equipment Program

California regulations require personal protective equipment and first aid supplies whenever hazards are present that due to process, environment, chemicals, or mechanical irritants, can cause injury or impair bodily function as a result of absorption, inhalation, or physical contact (8 CCR §§ 3380 to 3400). The PPEC project operational environment will require personal protective equipment.

All safety equipment must meet National Institute of Safety and Health (NIOSH) or American National Standards Institute (ANSI) standards and will carry markings, numbers, or certificates of approval. Respirators must meet NIOSH and Cal/OSHA standards. Each employee will be provided with the following information pertaining to the protective clothing and equipment (PPEC 2011a):

- proper use, maintenance, and storage;
- when to use the protective clothing and equipment;
- benefits and limitations;
- when and how to replace the protective clothing and equipment; and
- each employee is checked for proper fit and to see if they are medically capable of wearing the equipment.

The Personal Protective Equipment Program ensures that employers comply with the applicable requirements for the program and provides employees with the information and training necessary to protect them from potential workplace hazards.

Emergency Action Plan

California regulations require an Emergency Action Plan (8 CCR § 3220). The AFC contains a satisfactory outline for an emergency action plan (PPEC 2009a).

The Emergency Action Plan will address the following:

- emergency escape procedures and emergency escape route for the facility;
- handling accidents involving serious injury or death;
- handling fires;
- hazardous waste or chemical spills;
- earthquakes;
- bomb threat;
- emergency shutdown;
- site security;
- emergency medical treatment and first aid
- decontamination;
- documentation and recordkeeping;
- news media;
- emergency notification list; and
- emergency telephone numbers.

Written Safety Program

In addition to the specific plans listed above, additional LORS called “safe work

practices" apply to the project. Both the Construction and the Operations Safety Programs will address safe work practices under a variety of programs. The components of these programs include, but are not limited to, the programs found under the heading Construction Safety and Health Program earlier in this staff assessment.

Safety Training Programs

Employees will be trained in the safe work practices described in the above-referenced safety programs.

Additional Mitigation Measures

Protecting construction workers from injury and disease is among the greatest challenges in occupational safety and health. The following facts are reported by the NIOSH:

- More than seven million persons work in the construction industry, representing 6 percent of the labor force. Approximately 1.5 million of these workers are self employed.
- Of approximately 600,000 construction companies, 90 percent employ fewer than 20 workers. Few have formal safety and health programs.
- From 1980 to 1993, an average of 1,079 construction workers was killed on the job each year, totaling more fatal injuries than in any other industry.
- Falls caused 3,859 construction worker fatalities (25.6 percent) between 1980 and 1993.
- Construction injuries account for 15 percent of workers' compensation costs.
- Assuring safety and health in construction is complex, involving short-term work sites, changing hazards, and multiple operations and crews working in close proximity.
- In 1990, Congress directed NIOSH to undertake research and training to reduce diseases and injuries among construction workers in the United States. Under this mandate, NIOSH funds both intramural and extramural research projects.

The hazards associated with the construction industry are thus well documented. These hazards increase in complexity in the multi-employer work sites typical of large complex industrial-type projects such as the construction of gas-fired cogeneration power plants. In order to reduce and/or eliminate these hazards, it has become standard industry practice to hire a Construction Safety Supervisor to ensure a safe and healthful environment for all personnel. This has been evident in the audits of power plants under construction recently conducted by the staff. The federal Occupational Safety and Health Administration (OSHA) has also entered into strategic alliances with several professional and trade organizations to promote and recognize safety professionals trained as Construction Safety Supervisors, Construction Health and Safety Officers, and other professional designations. The goal of these partnerships is to encourage construction subcontractors to improve their safety and health performance; to assist them in striving for the elimination of the four hazards (falls, electrical, caught in/between and struck-by hazards), which account for the majority of fatalities and

injuries in this industry and have been the focus of targeted OSHA inspections; to prevent serious accidents in the construction industry through implementation of enhanced safety and health programs and increased employee training; and to recognize those subcontractors with exemplary safety and health programs.

To date, there are no OSHA or Cal/OSHA requirements that an employer hire or provide for a Construction Safety Officer. OSHA and Cal/OSHA regulations do, however, require that safety be provided by an employer and the term “Competent Person” is used in many OSHA and Ca/-OSHA standards, documents, and directives. A “Competent Person” is usually defined by OSHA as an individual who, by way of training and/or experience, is knowledgeable of standards, is capable of identifying workplace hazards relating to the specific operations, is designated by the employer, and has authority to take appropriate action. Therefore, in order to meet the intent of the OSHA standard to provide for a safe workplace during power plant construction, staff proposes Condition of Certification **WORKER SAFETY-3,** which would require the applicant/project owner to designate and provide for a power plant site Construction Safety Supervisor.

As discussed above, the hazards associated with the construction industry are well documented. These hazards increase in complexity in the multi-employer work sites typical of large complex industrial-type projects such as the construction of gas-fired power plants.

Accidents, fires, and a worker death have occurred at Energy Commission-certified power plants in the recent past due to the failure to recognize and control safety hazards and the inability to adequately supervise compliance with occupational safety and health regulations. Safety problems have been documented by Energy Commission staff in safety audits conducted in 2005 at several power plants under construction. The findings of the audit staff include, but are not limited to, such safety oversights as:

- lack of posted confined space warning placards/signs;
- confusing and/or inadequate electrical and machinery lockout/tagout permitting and procedures;
- confusing and/or inappropriate procedures for handing over lockout/tagout and confined space permits from the construction team to commissioning team and then to operations;
- dangerous placement of hydraulic elevated platforms under each other;
- inappropriate placement of fire extinguishers near hotwork;
- dangerous placement of numerous power cords in standing water on the site, thus increasing the risk of electrocution;
- construction of an unsafe aqueous ammonia unloading pad;
- inappropriate and unsecure placement of above-ground natural gas pipelines inside the facility but too close to the perimeter fence; and

- lack of adequate employee or contractor written training programs addressing proper procedures to follow in the event of finding suspicious packages or objects either on or off site.

In order to reduce and/or eliminate these types of hazards, it is necessary for the Energy Commission to have a professional Safety Monitor on site to track compliance with Cal/OSHA regulations and periodically audit safety compliance during construction, commissioning, and the hand over to operational status. These requirements are outlined in proposed Condition of Certification **WORKER SAFETY-4**. A Safety Monitor, hired by the project owner yet reporting to the Chief Building Official and Compliance Project Manager CPM, would serve as an extra set of eyes to ensure that safety procedures and practices are fully implemented at all power plants certified by the Energy Commission.

Fire Hazards

During construction and operation of the proposed PPEC project, there is the potential for both small fires and major structural fires. Electrical sparks, combustion of fuel oil, natural gas, hydraulic fluid, mineral oil, or insulating fluid at the power plant switchyard; or flammable liquids, explosions, and over-heated equipment may cause small fires. Major structural fires in areas without automatic fire detection and suppression systems are unlikely to develop at power plants. Fires and explosions of natural gas or other flammable gasses or liquids are rare. Compliance with all LORS will be adequate to assure protection from all fire hazards.

Staff reviewed the information provided in the AFC to determine if available fire protection services and equipment would adequately protect workers and to determine the project's impact on fire protection services in the area. The project will rely on both on-site fire protection systems and local fire protection services. The on-site fire protection system provides the first line of defense for small fires. In the event of a major fire, fire support services, including trained firefighters and equipment for a sustained response, would be provided by the RFPD (PPEC 2011a).

Construction

During construction, portable fire extinguishers, small hose lines, and fixed fire suppression equipment would be placed throughout the site at appropriate intervals and periodically maintained. An on-site water supply sufficient to operate the fire suppression equipment would be provided, and safety procedures and training would be implemented in accordance with Cal OSHA regulations, National Fire Protection Association (NFPA) standards, and the guidelines of the Construction Fire Protection and Prevention Program (PPEC 2011a).

Operation

The information in the AFC indicates that the project intends to meet the fire protection and suppression requirements of the California Fire Code, all applicable recommended NFPA standards (including Standard 850 addressing fire protection at electric generating plants), and all Cal/OSHA requirements. Fire suppression elements in the proposed plant will include both fixed and portable fire extinguishing systems. The fire water will be supplied by the tying into the existing fire water supply system through two

points that connect into the fire new fire loop. The fire loop would supply the sprinkler system, water deluge system, and the fire hydrants. The fire water system would be designed in accordance with NFPA 850 and would provide sufficient flow to meet NFPA codes for firewater demands.

A fixed water sprinkler system would be installed in areas of risk and in administrative buildings in accordance with NFPA requirements. A carbon dioxide fire protection system would be provided for each of the combustion turbine generators. The CTG auxiliary equipment and transformers would be contained each in a separate concrete berm and protected with a water deluge system. Chemical and gas extinguishers would be installed in areas of risk where water would be ineffective as a fire suppressant. Other plant equipment such as electrical enclosures and the switchyard would be protected with a dry-type fire suppression system (PPEC 2011a).

The fire protection system would have fire detection sensors that will trigger alarms and alert the control room as well as the RFPD. In addition to the fixed fire protection system, the appropriate class of service portable extinguishers and fire hydrants would be located throughout the facility at code-approved intervals (PPEC 2011a). These systems are standard requirement by the NFPA and the California Fire Code, and staff has determined that they will ensure adequate fire protection.

The applicant would be required by proposed Conditions of Certification **WORKER SAFETY-1** and **-2** to provide the final Fire Protection and Prevention Program to staff prior to construction and operation of the project, to confirm the adequacy of the proposed fire protection measures.

Emergency Medical Services Response

Staff conducted a statewide survey to determine the frequency of EMS response and off-site fire-fighter response for natural gas-fired power plants in California. The purpose of the analysis was to determine what impact, if any, power plants may have on local emergency services. Staff has concluded that incidents at power plants that require fire or EMS response are infrequent and represent an insignificant impact on the local fire departments, except for rare instances where a rural fire department has mostly volunteer firefighting staff. However, staff has determined that the potential for both work-related and nonwork-related heart attacks exists at power plants. In fact, staff's research on the frequency of EMS response to gas-fired power plants similar to the PPEC project shows that many of the responses for cardiac emergencies involved nonwork-related incidences, including those involving visitors. The need for prompt response within a minutes is critical to the effectiveness of cardiac intervention . Staff believes that the quickest medical intervention can only be achieved with the use of an on-site automatic external defibrillator (AED); the response from an off-site provider would take longer regardless of the provider location. Therefore, staff concludes that, with the advent of modern cost-effective cardiac defibrillation devices, it is proper in a power plant environment to maintain such a device on site to address cardiac arrythmias resulting from industrial accidents or other nonwork-related causes.

Therefore, staff proposes a Condition of Certification **WORKER SAFETY-5** which would require that this portable AED be located on site, that all power plant employees on site

during operations be trained in its use, and that a representative number of workers on site during construction and commissioning also be trained in its use.

CUMULATIVE IMPACTS AND MITIGATION

Staff reviewed the potential for the construction and operation of the proposed PPEC project, combined with existing heavy industrial and commercial facilities in the immediate vicinity, to result in impacts on the fire and emergency service capabilities of the RFPD. The RFPD currently is responsible for response to many other industrial facilities with similar fire riscks to those posed by the proposed facility staff ,therefore, concludes that the RFPD is staffed and equipped, and would be able to adequately respond to an incident at the proposed facility.

Given the lack of unique fire hazards associated with a modern gas-fired power plant, and that incidents at power plants that require fire or EMS response are infrequent, staff finds that this project will not have a significant adverse cumulative impact on the RFPD's ability to respond to a fire or medical emergency where its effects would be cumulatively considerable.

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Staff concludes that with the adoption of the proposed Conditions of Certification **WORKER SAFETY-1** through**-5**, construction and operation of the PPEC 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 worker safety and fire protection.

CONCLUSIONS

Staff concludes that if the applicant for the proposed PPEC project provides a Project Construction Safety and Health Program and a Project Operations and Maintenance Safety and Health Program as required by Conditions of Certification **WORKER SAFETY -1**, and **-2** and fulfils the requirements of Conditions of Certification **WORKER SAFETY-3** through **-5**, the project would incorporate sufficient measures to ensure adequate levels of industrial safety and comply with applicable LORS. Staff also concludes that incidents at power plants that require fire or EMS response are infrequent and thus will represent a small impact on the local fire department.

PROPOSED CONDITIONS OF CERTIFICATION

WORKER SAFETY-1 The project owner shall submit to the Compliance Project Manager (CPM) a copy of the Project Construction Safety and Health Program containing the following:

1. a Construction Personal Protective Equipment Program;
2. a Construction Exposure Monitoring Program;
3. a Construction Injury and Illness Prevention Program;

4. a Construction Emergency Action Plan; and

5. a Construction Fire Prevention Plan.

The Personal Protective Equipment Program, the Exposure Monitoring Program, and the Injury and Illness Prevention Program shall be submitted to the CPM for review and approval concerning compliance of the programs with all applicable Safety Orders. The Construction Emergency Action Plan and the Fire Prevention Plan shall be submitted to the San Diego Rural Fire District (RFPD) for review and comment prior to submittal to the CPM for approval.

Verification: At least 30 days prior to the start of construction, the project owner shall submit to the CPM for review and approval a copy of the Project Construction Safety and Health Program.

The project owner shall provide a copy of a letter to the CPM from the RFPD stating the Fire Department's comments on the Construction Fire Prevention Plan and Emergency Action Plan.

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

1. an Operation Injury and Illness Prevention Plan;

2. an Emergency Action Plan;

3. a Hazardous Materials Management Program;

4. an Operation Fire Prevention Program (8 CCR § 3221); and

5. a Personal Protective Equipment Program (8 CCR §§ 3401-3411).

The Operation Injury and Illness Prevention Plan, Emergency Action Plan, and Personal Protective Equipment Program shall be submitted to the CPM for review and comment concerning compliance of the programs with all applicable Safety Orders. The Operation Fire Prevention Plan, the Hazardous Materials Management Program, and the Emergency Action Plan shall also be submitted to the RFPD for review and comment.

Verification: At least 30 days prior to the start of first-fire or commissioning, the project owner shall submit to the CPM for approval a copy of the Project Operations and Maintenance Safety and Health Program.

The project owner shall provide a copy of a letter to the CPM from the RFPD stating the Fire Department's comments on the Operations Fire Prevention Plan and Emergency Action Plan.

WORKER SAFETY-3 The project owner shall employ a site Construction Safety Supervisor (CSS) who, by way of training and/or experience, is knowledgeable of power plant construction activities and relevant laws, ordinances, regulations, and standards; is capable of identifying workplace hazards relating to the construction activities; and has authority to take appropriate action to assure compliance and mitigate hazards. The CSS

shall:

1. have overall authority for coordination and implementation of all occupational safety and health practices, policies, and programs;
2. assure that the safety program for the project complies with Cal/OSHA and federal regulations related to power plant projects;
3. assure that all construction and commissioning workers and supervisors receive adequate safety training;
4. complete accident and safety-related incident investigations and emergency response reports for injuries and inform the CPM of safety-related incidents; and
5. assure that all the plans identified in Conditions of Certification **WORKER SAFETY-1** and **-2** are implemented.
6. submit in the Monthly Compliance Report a monthly safety inspection report to include:
    - record of all employees trained for that month (all records shall be kept on site for the duration of the project);
    - summary report of safety management actions and safety-related incidents that occurred during the month;
    - report of any continuing or unresolved situations and incidents that may pose danger to life or health; and
    - report of accidents and injuries that occurred during the month.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit to the CPM the name and contact information and qualifications for the Construction Safety Supervisor (CSS).

The contact information of any replacement (CSS) shall be submitted to the CPM within one business day.

WORKER SAFETY-4 The project owner shall make payments to all costs incurred by the Chief Building Official (CBO) for the services of a Safety Monitor based upon a reasonable fee schedule to be negotiated between the project owner and the CBO. Those services shall be in addition to other work performed by the CBO. The Safety Monitor shall be selected by and report directly to the CBO and will be responsible for verifying that the Construction Safety Supervisor, as required in Condition of Certification **WORKER SAFETY-3**, implements all appropriate Cal/OSHA and Energy Commission safety requirements. The Safety Monitor shall conduct on-site (including linear facilities) safety inspections at intervals necessary to fulfill those responsibilities.

Verification: At least 30 days prior to the start of construction, the project owner shall provide proof of its agreement to fund the Safety Monitor services to the CPM for review and approval.

WORKER SAFETY-5 The project owner shall ensure that a portable automatic

external defibrillator (AED) is properly maintained and located on site during construction and operations and shall implement a program to ensure that all workers are properly trained in its use and that the equipment is properly maintained and functioning at all times. During construction and commissioning, the following persons shall be trained in use of the AED and shall be on site whenever the workers that they supervise are on site: the Construction Project Manager or delegate, the Construction Safety Supervisor or delegate, and all shift foremen. During operations, all power plant employees shall be trained in use of the AED. The training program shall be submitted to the CPM for review and approval.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit to the CPM proof that a portable automatic external defibrillator (AED) exists on site and a copy of the training and maintenance program for review and approval.

REFERENCES

U.S. OSHA (United States Occupational Safety and Health Administration). 1993 – Process Safety Management / Process Safety Management Guidelines for Compliance. U.S. Department of Labor, Washington, D.C.

PPEC 2011a – Pio Pico Energy Center, LLC / G. Chandler (tn 59646). Application for Certification Volume 1 & 2, dated February 9, 2011. Submitted to CEC/Docket Unit on February 9, 2011.

Engineering

Assessment

FACILITY DESIGN

Shahab Khoshmashrab

SUMMARY OF CONCLUSIONS

The California Energy Commission staff concludes that the design, construction, and eventual closure of the project and its linear facilities would likely comply with applicable engineering laws, ordinances, regulations and standards. The proposed conditions of certification, below, would ensure compliance with these laws, ordinances, regulations and standards.

INTRODUCTION

Facility design encompasses the civil, structural, mechanical, and electrical engineering design of the Pio Pico Energy Center (PPEC). The purpose of this analysis is to:

- Verify that the laws, ordinances, regulations and standards (LORS) that apply to the engineering design and construction of the project have been identified;
- Verify that both the project and its ancillary facilities are sufficiently described, including proposed design criteria and analysis methods, in order to provide reasonable assurance that the project will be designed and constructed in accordance with all applicable engineering LORS, in a manner that also ensures the public health and safety;
- Determine whether special design features should be considered during final design to address conditions unique to the site which could influence public health and safety; and
- Describe the design review and construction inspection process and establish the conditions of certification used to monitor and ensure compliance with the engineering LORS, in addition to any special design requirements.

Subjects discussed in this analysis include:

- Identification of the engineering LORS that apply to facility design;
- Evaluation of the applicant's proposed design criteria, including identification of criteria essential to public health and safety;
- Proposed modifications and additions to the application for certification (AFC) necessary for compliance with applicable engineering LORS; and
- Conditions of certification proposed by staff to ensure that the project will be designed and constructed to ensure public health and safety and comply with all applicable engineering LORS.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Lists of LORS applicable to each engineering discipline (civil, structural, mechanical, and electrical) are described in the AFC (PPEC 2011a, AFC Appendices A through F). Key LORS are listed in **Facility Design Table 1,** below:

FACILITY DESIGN Table 1

Key Engineering Laws, Ordinances, Regulations and Standards (LORS)

Applicable LORS	Description
Federal	Title 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health standards
State	2010 (or the latest edition in effect) California Building Standards Code (CBSC) (also known as Title 24, California Code of Regulations)
Local	San Diego County regulations and ordinances
General	American National Standards Institute (ANSI) American Society of Mechanical Engineers (ASME) American Welding Society (AWS) American Society for Testing and Materials (ASTM)

Condition of Certification **MECH-2** requires the project owner to obtain approval of the pressure vessels from California Occupational Safety and Health Administration (Cal-OSHA) in order to satisfy Title 29 Code of Federal Regulations' safety requirements.

The following conditions of certification require the project to comply with the California Building Standards Code and San Diego County regulations and ordinances to ensure that the project would be built to applicable engineering codes and ensure public health and safety.

For the project to be built in a manner that would ensure public health and safety and operational integrity of project equipment, the LORS listed above in **FACILITY DESIGN Table 1** under the "**General**" heading, must also be met by the project. The LORS listed under this heading are only some of the key engineering standards applicable to the project; for a comprehensive list of engineering LORS, please see AFC Appendices A through F.

SETTING

PPEC would be built on an approximately 10-acre site located in an unincorporated area of San Diego County, known as Otay Mesa. For more information on the site and its related project description, please see the **Project Description** section of this document. Additional engineering design details are contained in the AFC, Appendices A through F (PPEC 2011a).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

The purpose of this analysis is to ensure that the project would be built to applicable engineering codes and ensure public health and safety. This analysis further verifies that applicable engineering LORS have been identified and that the project and its ancillary facilities have been described in adequate detail. It also evaluates the applicant's proposed design criteria, describes the design review and construction inspection process, and establishes conditions of certification that would monitor and ensure compliance with engineering LORS and any other special design requirements. These conditions allow both the California Energy Commission (Energy Commission) compliance project manager (CPM) and the applicant to adopt a compliance monitoring program that will verify compliance with these LORS.

SITE PREPARATION AND DEVELOPMENT

Staff has evaluated the proposed design criteria for grading, flood protection, erosion control, site drainage, and site access, in addition to the criteria for designing and constructing linear support facilities such as natural gas and electric transmission interconnections. The applicant proposes the use of accepted industry standards (see PPEC 2011a, Appendices A through F, for a representative list of applicable industry standards), design practices, and construction methods in preparing and developing the site. Staff concludes that this project, including its linear facilities, would most likely comply with all applicable site preparation LORS. To ensure compliance, staff proposes the conditions of certification listed below and in the **Geology and Paleontology** section of this document.

MAJOR STRUCTURES, SYSTEMS, AND EQUIPMENT

Major structures, systems, and equipment are structures and their associated components or equipment that are necessary for power production, costly or time consuming to repair or replace, are used for the storage, containment, or handling of hazardous or toxic materials, or could become potential health and safety hazards if not constructed according to applicable engineering LORS.

PPEC will be designed and constructed to the 2010 California Building Standards Code (CBSC), also known as Title 24, California Code of Regulations, which encompasses the California Building Code (CBC), California Building Standards Administrative Code, California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Fire Code, California Code for Building Conservation, California Reference Standards Code, and other applicable codes and standards in effect when the design and construction of the project actually begin. If the initial designs are submitted to the chief building official (CBO) for review and approval after the update to the 2010 CBSC takes effect, the 2010 CBSC provisions shall be replaced with the updated provisions.

Certain structures in a power plant may be required, under the CBC, to undergo dynamic lateral force (structural) analysis; others may be designed using the simpler static analysis procedure. In order to ensure that structures are analyzed according to their appropriate lateral force procedure, staff has included condition of certification

STRUC-1, below, which, in part, requires the project CBO's review and approval of the owner's proposed lateral force procedures before construction begins.

PROJECT QUALITY PROCEDURES

The applicant describes a quality program intended to inspire confidence that its systems and components will be designed, fabricated, stored, transported, installed, and tested in accordance with all appropriate power plant technical codes and standards (PPEC 2011a, AFC § 3.12.6, Appendices A through F). Compliance with design requirements will be verified through specific inspections and audits. Implementation of this quality assurance/quality control (QA/QC) program will ensure that PPEC is actually designed, procured, fabricated, and installed as described in this analysis.

COMPLIANCE MONITORING

Under Section 104.1 of the 2010 CBC, the CBO is authorized and directed to enforce all provisions of the CBC. The Energy Commission itself serves as the building official, and has the responsibility to enforce the code, for all of the energy facilities it certifies. In addition, the Energy Commission has the power to interpret the CBC and adopt and enforce both rules and supplemental regulations that clarify application of the CBC's provisions.

The Energy Commission's design review and construction inspection process conforms to CBC requirements and ensures that all facility design conditions of certification are met. As provided by Section 103.3 of the 2010 CBC, the Energy Commission appoints experts to perform design review and construction inspections and act as delegate CBOs on behalf of the Energy Commission. These delegates may include the local building official and/or independent consultants hired to provide technical expertise that is not provided by the local official alone. The applicant, through permit fees provided by the CBC, pays the cost of these reviews and inspections. While building permits in addition to Energy Commission certification are not required for this project, the applicant pays in lieu of CBC permit fees to cover the costs of these reviews and inspections.

Engineering and compliance staff will invite San Diego County or a third-party engineering consultant to act as CBO for this project. When an entity has been assigned CBO duties, Energy Commission staff will complete a memorandum of understanding (MOU) with that entity to outline both its roles and responsibilities and those of its subcontractors and delegates.

Staff has developed proposed conditions of certification to ensure protection of public health and safety and compliance with engineering design LORS. Some of these conditions address the roles, responsibilities, and qualifications of the engineers who will design and build the proposed project (conditions of certification **GEN-1** through **GEN-8**). These engineers must be registered in California and sign and stamp every submittal of design plans, calculations, and specifications submitted to the CBO. These conditions require that every element of the project's construction (subject to CBO review and approval) be approved by the CBO before it is performed. They also require

that qualified special inspectors perform or oversee special inspections required by all applicable LORS.

While the Energy Commission and delegate CBO have the authority to allow some flexibility in scheduling construction activities, these conditions are written so that no element of construction (of permanent facilities subject to CBO review and approval), which could be difficult to reverse or correct, can proceed without prior CBO approval. Elements of construction that are not difficult to reverse may proceed without approval of the plans. The applicant bears the responsibility to fully modify construction elements in order to comply with all design changes resulting from the CBO's subsequent plan review and approval process.

FACILITY CLOSURE

The removal of a facility from service (decommissioning) when it reaches the end of its useful life ranges from "mothballing," to the removal of all equipment and appurtenant facilities and subsequent restoration of the site. Future conditions that could affect decommissioning are largely unknown at this time.

In order to ensure that decommissioning will be completed in a manner that is environmentally sound, safe, and protects the public health and safety, the applicant shall submit a decommissioning plan to the Energy Commission for review and approval before the project's decommissioning begins. The plan shall include a discussion of:

- Proposed decommissioning activities for the project and all appurtenant facilities that were constructed as part of the project;
- All applicable LORS, local/regional plans, and proof of adherence to those applicable LORS and local/regional plans;
- The activities necessary to restore the site if the plan requires removal of all equipment and appurtenant facilities; and
- Decommissioning alternatives other than complete site restoration.

Satisfying the above requirements should serve as adequate protection, even in the unlikely event that the project is abandoned. Staff has proposed general conditions (see **General Conditions**) to ensure that these measures are included in the Facility Closure Plan.

CONCLUSIONS AND RECOMMENDATIONS

1. The laws, ordinances, regulations and standards (LORS) identified in the AFC and supporting documents directly apply to the project.

2. Staff has evaluated the proposed engineering LORS, design criteria, and design methods in the record, and concludes that the design, construction, and eventual closure of the project will likely comply with applicable engineering LORS.

3. The proposed conditions of certification will ensure that PPEC is designed and constructed in accordance with applicable engineering LORS. This will be

accomplished through design review, plan checking, and field inspections that will be performed by the CBO or other Energy Commission delegate. Staff will audit the CBO to ensure satisfactory performance.

4. Though future conditions that could affect decommissioning are largely unknown at this time, it can reasonably be concluded that if the project owner submits a decommissioning plan as required in the **General Conditions** portion of this document prior to decommissioning, decommissioning procedures will comply with all applicable engineering LORS.

Energy Commission staff recommends that:

1. The proposed conditions of certification be adopted to ensure that the project is designed and constructed in a manner that protects the public health and safety and complies with all applicable engineering LORS;

2. The project be designed and built to the 2010 CBSC (or successor standards, if in effect when initial project engineering designs are submitted for review); and

3. The CBO reviews the final designs, checks plans, and performs field inspections during construction. Energy Commission staff shall audit and monitor the CBO to ensure satisfactory performance.

CONDITIONS OF CERTIFICATION

GEN-1 The project owner shall design, construct, and inspect the project in accordance with the 2010 California Building Standards Code (CBSC), also known as Title 24, California Code of Regulations, which encompasses the California Building Code (CBC), California Building Standards Administrative Code, California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Fire Code, California Code for Building Conservation, California Reference Standards Code, and all other applicable engineering LORS in effect at the time initial design plans are submitted to the CBO for review and approval (the CBSC in effect is the edition that has been adopted by the California Building Standards Commission and published at least 180 days previously). The project owner shall ensure that all the provisions of the above applicable codes are enforced during the construction, addition, alteration, moving, demolition, repair, or maintenance of the completed facility. All transmission facilities (lines, switchyards, switching stations and substations) are covered in the conditions of certification in the **Transmission System Engineering** section of this document.

In the event that the initial engineering designs are submitted to the CBO when the successor to the 2010 CBSC is in effect, the 2010 CBSC provisions shall be replaced with the applicable successor provisions. Where, in any specific case, different sections of the code specify different materials, methods of construction or other requirements, the most restrictive shall

govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern.

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

Verification: Within 30 days following receipt of the certificate of occupancy, the project owner shall submit to the CPM a statement of verification, signed by the responsible design engineer, attesting that all designs, construction, installation, and inspection requirements of the applicable LORS and the Energy Commission's decision have been met in the area of facility design. The project owner shall provide the CPM a copy of the certificate of occupancy within 30 days of receipt from the CBO.

Once the certificate of occupancy has been issued, the project owner shall inform the CPM at least 30 days prior to any construction, addition, alteration, moving, demolition, repair, or maintenance to be performed on any portion(s) of the completed facility that requires CBO approval for compliance with the above codes. The CPM will then determine if the CBO needs to approve the work.

GEN-2 Before submitting the initial engineering designs for CBO review, the project owner shall furnish the CPM and the CBO with a schedule of facility design submittals, and master drawings and master specifications list. The master drawings and master specifications list shall contain a list of proposed submittal packages of designs, calculations, and specifications for major structures, systems, and equipment. Major structures, systems, and equipment are structures and their associated components or equipment that are necessary for power production, costly or time consuming to repair or replace, are used for the storage, containment, or handling of hazardous or toxic materials, or could become potential health and safety hazards if not constructed according to applicable engineering LORS. The schedule shall contain the date of each submittal to the CBO. To facilitate audits by Energy Commission staff, the project owner shall provide specific packages to the CPM upon request.

Verification: At least 60 days (or a project owner- and CBO-approved alternative time frame) prior to the start of rough grading, the project owner shall submit to the CBO and to the CPM the schedule, and the master drawings and master specifications list of documents to be submitted to the CBO for review and approval. These documents shall be the pertinent design documents for the major structures, systems, and equipment defined above in Condition of Certification **GEN-2**. Major structures and equipment shall be added to or deleted from the list only with CPM approval. The project owner shall provide schedule updates in the monthly compliance report.

GEN-3 The project owner shall make payments to the CBO for design review, plan checks, and construction inspections, based upon a reasonable fee schedule to be negotiated between the project owner and the CBO. These fees may be consistent with the fees listed in the 2010 CBC, adjusted for inflation and other appropriate adjustments; may be based on the value of the facilities

reviewed; may be based on hourly rates; or may be otherwise agreed upon by the project owner and the CBO.

Verification: The project owner shall make the required payments to the CBO in accordance with the agreement between the project owner and the CBO. The project owner shall send a copy of the CBO's receipt of payment to the CPM in the next monthly compliance report indicating that applicable fees have been paid.

GEN-4 Prior to the start of rough grading, the project owner shall assign a California-registered architect, or a structural or civil engineer, as the resident engineer (RE) in charge of the project. All transmission facilities (lines, switchyards, switching stations, and substations) are addressed in the conditions of certification in the **Transmission System Engineering** section of this document.

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

The RE shall:

1. Monitor progress of construction work requiring CBO design review and inspection to ensure compliance with LORS;

2. Ensure that construction of all facilities subject to CBO design review and inspection conforms in every material respect to applicable LORS, these conditions of certification, approved plans, and specifications;

3. Prepare documents to initiate changes in approved drawings and specifications when either directed by the project owner or as required by the conditions of the project;

4. Be responsible for providing project inspectors and testing agencies with complete and up-to-date sets of stamped drawings, plans, specifications, and any other required documents;

5. Be responsible for the timely submittal of construction progress reports to the CBO from the project inspectors, the contractor, and other engineers who have been delegated responsibility for portions of the project; and

6. Be responsible for notifying the CBO of corrective action or the disposition of items noted on laboratory reports or other tests when they do not conform to approved plans and specifications.

The resident engineer (or his delegate) must be located at the project site, or be available at the project site within a reasonable period of time, during any hours in which construction takes place.

The RE shall have the authority to halt construction and to require changes or remedial work if the work does not meet requirements.

If the RE or the delegated engineers are reassigned or replaced, the project owner shall submit the name, qualifications and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer.

Verification: At least 30 days (or project owner- and CBO-approved alternative time frame) prior to the start of rough grading, the project owner shall submit to the CBO for review and approval, the resume and registration number of the RE and any other delegated engineers assigned to the project. The project owner shall notify the CPM of the CBO's approvals of the RE and other delegated engineer(s) within five days of the approval.

If the RE or the delegated engineer(s) is subsequently reassigned or replaced, the project owner has five days to submit the resume and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

GEN-5 Prior to the start of rough grading, the project owner shall assign at least one of each of the following California registered engineers to the project: a civil engineer; a soils, geotechnical, or civil engineer experienced and knowledgeable in the practice of soils engineering; and an engineering geologist. Prior to the start of construction, the project owner shall assign at least one of each of the following California registered engineers to the project: a design engineer who is either a structural engineer or a civil engineer fully competent and proficient in the design of power plant structures and equipment supports; a mechanical engineer; and an electrical engineer. (California Business and Professions Code section 6704 et seq., and sections 6730, 6731 and 6736 require state registration to practice as a civil engineer or structural engineer in California). All transmission facilities (lines, switchyards, switching stations, and substations) are handled in the conditions of certification in the **Transmission System Engineering** section of this document.

The tasks performed by the civil, mechanical, electrical, or design engineers may be divided between two or more engineers, as long as each engineer is responsible for a particular segment of the project (for example, proposed earthwork, civil structures, power plant structures, equipment support). No segment of the project shall have more than one responsible engineer. The transmission line may be the responsibility of a separate California registered electrical engineer.

The project owner shall submit, to the CBO for review and approval, the names, qualifications, and registration numbers of all responsible engineers assigned to the project.

If any one of the designated responsible engineers is subsequently reassigned or replaced, the project owner shall submit the name,

qualifications and registration number of the newly assigned responsible engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer.

A. The civil engineer shall:

1. Review the foundation investigations, geotechnical, or soils reports prepared by the soils engineer, the geotechnical engineer, or by a civil engineer experienced and knowledgeable in the practice of soils engineering;

2. Design (or be responsible for the design of), stamp, and sign all plans, calculations, and specifications for proposed site work, civil works, and related facilities requiring design review and inspection by the CBO. At a minimum, these include: grading, site preparation, excavation, compaction, construction of secondary containment, foundations, erosion and sedimentation control structures, drainage facilities, underground utilities, culverts, site access roads and sanitary sewer systems; and

3. Provide consultation to the RE during the construction phase of the project and recommend changes in the design of the civil works facilities and changes to the construction procedures.

B. The soils engineer, geotechnical engineer, or civil engineer experienced and knowledgeable in the practice of soils engineering, shall:

1. Review all the engineering geology reports;

2. Prepare the foundation investigations, geotechnical, or soils reports containing field exploration reports, laboratory tests, and engineering analysis detailing the nature and extent of the soils that could be susceptible to liquefaction, rapid settlement or collapse when saturated under load;

3. Be present, as required, during site grading and earthwork to provide consultation and monitor compliance with requirements set forth in the 2010 CBC (depending on the site conditions, this may be the responsibility of either the soils engineer, the engineering geologist, or both); and

4. Recommend field changes to the civil engineer and RE.

This engineer shall be authorized to halt earthwork and to require changes if site conditions are unsafe or do not conform to the predicted conditions used as the basis for design of earthwork or foundations.

C. The engineering geologist shall:

1. Review all the engineering geology reports and prepare a final soils grading report; and

2. Be present, as required, during site grading and earthwork to provide consultation and monitor compliance with the requirements set forth in the 2010 CBC (depending on the site conditions, this may be the responsibility of either the soils engineer, the engineering geologist, or both).

D. The design engineer shall:

1. Be directly responsible for the design of the proposed structures and equipment supports;

2. Provide consultation to the RE during design and construction of the project;

3. Monitor construction progress to ensure compliance with engineering LORS;

4. Evaluate and recommend necessary changes in design; and

5. Prepare and sign all major building plans, specifications, and calculations.

E. The mechanical engineer shall be responsible for, and sign and stamp a statement with, each mechanical submittal to the CBO, stating that the proposed final design plans, specifications, and calculations conform to all of the mechanical engineering design requirements set forth in the Energy Commission's decision.

F. The electrical engineer shall:

1. Be responsible for the electrical design of the project; and

2. Sign and stamp electrical design drawings, plans, specifications, and calculations.

Verification: At least 30 days (or project owner- and CBO-approved alternative time frame) prior to the start of rough grading, the project owner shall submit to the CBO for review and approval, resumes and registration numbers of the responsible civil engineer, soils (geotechnical) engineer and engineering geologist assigned to the project.

At least 30 days (or project owner- and CBO-approved alternative time frame) prior to the start of construction, the project owner shall submit to the CBO for review and approval, resumes and registration numbers of the responsible design engineer, mechanical engineer, and electrical engineer assigned to the project.

The project owner shall notify the CPM of the CBO's approvals of the responsible engineers within five days of the approval.

If the designated responsible engineer is subsequently reassigned or replaced, the project owner has five days in which to submit the resume and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

GEN-6 Prior to the start of an activity requiring special inspection, including prefabricated assemblies, the project owner shall assign to the project, qualified and certified special inspector(s) who shall be responsible for the special inspections required by the 2010 CBC. All transmission facilities (lines, switchyards, switching stations, and substations) are handled in conditions of certification in the **Transmission System Engineering** section of this document.

A certified weld inspector, certified by the American Welding Society (AWS), and/or American Society of Mechanical Engineers (ASME) as applicable, shall inspect welding performed on-site requiring special inspection (including structural, piping, tanks and pressure vessels).

The special inspector shall:

1. Be a qualified person who shall demonstrate competence, to the satisfaction of the CBO, for inspection of the particular type of construction requiring special or continuous inspection;

2. Inspect the work assigned for conformance with the approved design drawings and specifications;

3. Furnish inspection reports to the CBO and RE. All discrepancies shall be brought to the immediate attention of the RE for correction, then, if uncorrected, to the CBO and the CPM for corrective action; and

4. Submit a final signed report to the RE, CBO, and CPM, stating whether the work requiring special inspection was, to the best of the inspector's knowledge, in conformance with the approved plans, specifications, and other provisions of the applicable edition of the CBC.

Verification: At least 15 days (or project owner- and CBO-approved alternative time frame) prior to the start of an activity requiring special inspection, the project owner shall submit to the CBO for review and approval, with a copy to the CPM, the name(s) and qualifications of the certified weld inspector(s), or other certified special inspector(s) assigned to the project to perform one or more of the duties set forth above. The project owner shall also submit to the CPM a copy of the CBO's approval of the qualifications of all special inspectors in the next monthly compliance report.

If the special inspector is subsequently reassigned or replaced, the project owner has five days in which to submit the name and qualifications of the newly assigned special

inspector to the CBO for approval. The project owner shall notify the CPM of the CBO's approval of the newly assigned inspector within five days of the approval.

GEN-7 If any discrepancy in design and/or construction is discovered in any engineering work that has undergone CBO design review and approval, the project owner shall document the discrepancy and recommend required corrective actions. The discrepancy documentation shall be submitted to the CBO for review and approval. The discrepancy documentation shall reference this condition of certification and, if appropriate, applicable sections of the CBC and/or other LORS.

Verification: The project owner shall transmit a copy of the CBO's approval of any corrective action taken to resolve a discrepancy to the CPM in the next monthly compliance report. If any corrective action is disapproved, the project owner shall advise the CPM, within five days, of the reason for disapproval and the revised corrective action to obtain CBO's approval.

GEN-8 The project owner shall obtain the CBO's final approval of all completed work that has undergone CBO design review and approval. The project owner shall request the CBO to inspect the completed structure and review the submitted documents. The project owner shall notify the CPM after obtaining the CBO's final approval. The project owner shall retain one set of approved engineering plans, specifications, and calculations (including all approved changes) at the project site or at another accessible location during the operating life of the project. Electronic copies of the approved plans, specifications, calculations, and marked-up as-builts shall be provided to the CBO for retention by the CPM.

Verification: Within 15 days of the completion of any work, the project owner shall submit to the CBO, with a copy to the CPM in the next monthly compliance report, (a) a written notice that the completed work is ready for final inspection, and (b) a signed statement that the work conforms to the final approved plans. After storing the final approved engineering plans, specifications, and calculations described above, the project owner shall submit to the CPM a letter stating both that the above documents have been stored and the storage location of those documents.

Within 90 days of the completion of construction, the project owner shall provide to the CBO three sets of electronic copies of the above documents at the project owner's expense. These are to be provided in the form of "read only" (Adobe .pdf 6.0 or newer version) files, with restricted (password-protected) printing privileges, on archive quality compact discs.

CIVIL-1 The project owner shall submit to the CBO for review and approval the following:

1. Design of the proposed drainage structures and the grading plan;

2. An erosion and sedimentation control plan;

3. A construction storm water pollution prevention plan (SWPPP);

4. Related calculations and specifications, signed and stamped by the responsible civil engineer; and

5. Soils, geotechnical, or foundation investigations reports required by the 2010 CBC.

Verification: At least 15 days (or project owner- and CBO-approved alternative time frame) prior to the start of site grading the project owner shall submit the documents described above to the CBO for design review and approval. In the next monthly compliance report following the CBO's approval, the project owner shall submit a written statement certifying that the documents have been approved by the CBO.

CIVIL-2 The resident engineer shall, if appropriate, stop all earthwork and construction in the affected areas when the responsible soils engineer, geotechnical engineer, or the civil engineer experienced and knowledgeable in the practice of soils engineering identifies unforeseen adverse soil or geologic conditions. The project owner shall submit modified plans, specifications, and calculations to the CBO based on these new conditions. The project owner shall obtain approval from the CBO before resuming earthwork and construction in the affected area.

Verification: The project owner shall notify the CPM within 24 hours when earthwork and construction is stopped as a result of unforeseen adverse geologic/soil conditions. Within 24 hours of the CBO's approval to resume earthwork and construction in the affected areas, the project owner shall provide to the CPM a copy of the CBO's approval.

CIVIL-3 The project owner shall perform inspections in accordance with the 2010 CBC. All plant site-grading operations, for which a grading permit is required, shall be subject to inspection by the CBO.

If, in the course of inspection, it is discovered that the work is not being performed in accordance with the approved plans, the discrepancies shall be reported immediately to the resident engineer, the CBO, and the CPM. The project owner shall prepare a written report, with copies to the CBO and the CPM, detailing all discrepancies, non-compliance items, and the proposed corrective action.

Verification: Within five days of the discovery of any discrepancies, the resident engineer shall transmit to the CBO and the CPM a non-conformance report (NCR), and the proposed corrective action for review and approval. Within five days of resolution of the NCR, the project owner shall submit the details of the corrective action to the CBO and the CPM. A list of NCRs, for the reporting month, shall also be included in the following monthly compliance report.

CIVIL-4 After completion of finished grading and erosion and sedimentation control and drainage work, the project owner shall obtain the CBO's approval of the final grading plans (including final changes) for the erosion and sedimentation control work. The civil engineer shall state that the work within his/her area of responsibility was done in accordance with the final approved plans.

Verification: Within 30 days (or project owner- and CBO-approved alternative time frame) of the completion of the erosion and sediment control mitigation and drainage work, the project owner shall submit to the CBO, for review and approval, the final grading plans (including final changes) and the responsible civil engineer's signed statement that the installation of the facilities and all erosion control measures were completed in accordance with the final approved combined grading plans, and that the facilities are adequate for their intended purposes, along with a copy of the transmittal letter to the CPM. The project owner shall submit a copy of the CBO's approval to the CPM in the next monthly compliance report.

STRUC-1 Prior to the start of any increment of construction, the project owner shall submit plans, calculations and other supporting documentation to the CBO for design review and acceptance for all project structures and equipment identified in the CBO-approved master drawing and master specifications lists. The design plans and calculations shall include the lateral force procedures and details as well as vertical calculations.

Construction of any structure or component shall not begin until the CBO has approved the lateral force procedures to be employed in designing that structure or component.

The project owner shall:

1. Obtain approval from the CBO of lateral force procedures proposed for project structures;

2. Obtain approval from the CBO for the final design plans, specifications, calculations, soils reports, and applicable quality control procedures. If there are conflicting requirements, the more stringent shall govern (for example, highest loads, or lowest allowable stresses shall govern). All plans, calculations, and specifications for foundations that support structures shall be filed concurrently with the structure plans, calculations, and specifications;

3. Submit to the CBO the required number of copies of the structural plans, specifications, calculations, and other required documents of the designated major structures prior to the start of on-site fabrication and installation of each structure, equipment support, or foundation;

4. Ensure that the final plans, calculations, and specifications clearly reflect the inclusion of approved criteria, assumptions, and methods used to develop the design. The final designs, plans, calculations, and specifications shall be signed and stamped by the responsible design engineer; and

5. Submit to the CBO the responsible design engineer's signed statement that the final design plans conform to applicable LORS.

Verification: At least 60 days (or project owner- and CBO-approved alternative time frame) prior to the start of any increment of construction of any structure or component

listed in the CBO-approved master drawing and master specifications list, the project owner shall submit to the CBO the above final design plans, specifications and calculations, with a copy of the transmittal letter to the CPM.

The project owner shall submit to the CPM, in the next monthly compliance report, a copy of a statement from the CBO that the proposed structural plans, specifications, and calculations have been approved and comply with the requirements set forth in applicable engineering LORS.

STRUC-2 The project owner shall submit to the CBO the required number of sets of the following documents related to work that has undergone CBO design review and approval:

1. Concrete cylinder strength test reports (including date of testing, date sample taken, design concrete strength, tested cylinder strength, age of test, type and size of sample, location and quantity of concrete placement from which sample was taken, and mix design designation and parameters);

2. Concrete pour sign-off sheets;

3. Bolt torque inspection reports (including location of test, date, bolt size, and recorded torques);

4. Field weld inspection reports (including type of weld, location of weld, inspection of non-destructive testing (NDT) procedure and results, welder qualifications, certifications, qualified procedure description or number (ref: AWS); and

5. Reports covering other structural activities requiring special inspections shall be in accordance with the 2010 CBC.

Verification: If a discrepancy is discovered in any of the above data, the project owner shall, within five days, prepare and submit an NCR describing the nature of the discrepancies and the proposed corrective action to the CBO, with a copy of the transmittal letter to the CPM. The NCR shall reference the condition(s) of certification and the applicable CBC chapter and section. Within five days of resolution of the NCR, the project owner shall submit a copy of the corrective action to the CBO and the CPM.

The project owner shall transmit a copy of the CBO's approval or disapproval of the corrective action to the CPM within 15 days. If disapproved, the project owner shall advise the CPM, within five days, the reason for disapproval, and the revised corrective action to obtain CBO's approval.

STRUC-3 The project owner shall submit to the CBO design changes to the final plans required by the 2010 CBC, including the revised drawings, specifications, calculations, and a complete description of, and supporting rationale for, the proposed changes, and shall give to the CBO prior notice of the intended filing.

Verification: On a schedule suitable to the CBO, the project owner shall notify the CBO of the intended filing of design changes, and shall submit the required number of sets of revised drawings and the required number of copies of the other above-mentioned documents to the CBO, with a copy of the transmittal letter to the CPM. The project owner shall notify the CPM, via the monthly compliance report, when the CBO has approved the revised plans.

STRUC-4 Tanks and vessels containing quantities of toxic or hazardous materials exceeding amounts specified in the 2010 CBC shall, at a minimum, be designed to comply with the requirements of that chapter.

Verification: At least 30 days (or project owner- and CBO-approved alternate time frame) prior to the start of installation of the tanks or vessels containing the above specified quantities of toxic or hazardous materials, the project owner shall submit to the CBO for design review and approval final design plans, specifications, and calculations, including a copy of the signed and stamped engineer's certification.

The project owner shall send copies of the CBO approvals of plan checks to the CPM in the following monthly compliance report. The project owner shall also transmit a copy of the CBO's inspection approvals to the CPM in the monthly compliance report following completion of any inspection.

MECH-1 The project owner shall submit, for CBO design review and approval, the proposed final design, specifications and calculations for each plant major piping and plumbing system listed in the CBO-approved master drawing and master specifications list. The submittal shall also include the applicable QA/QC procedures. Upon completion of construction of any such major piping or plumbing system, the project owner shall request the CBO's inspection approval of that construction.

The responsible mechanical engineer shall stamp and sign all plans, drawings, and calculations for the major piping and plumbing systems, subject to CBO design review and approval, and submit a signed statement to the CBO when the proposed piping and plumbing systems have been designed, fabricated, and installed in accordance with all of the applicable laws, ordinances, regulations and industry standards, which may include, but are not limited to:

- American National Standards Institute (ANSI) B31.1 (Power Piping Code);
- ANSI B31.2 (Fuel Gas Piping Code);
- ANSI B31.3 (Chemical Plant and Petroleum Refinery Piping Code);
- ANSI B31.8 (Gas Transmission and Distribution Piping Code);
- NACE R.P. 0169-83;
- NACE R.P. 0187-87;
- Title 24, California Code of Regulations, Part 5 (California Plumbing Code);

- Title 24, California Code of Regulations, Part 6 (California Energy Code, for building energy conservation systems and temperature control and ventilation systems);
- Title 24, California Code of Regulations, Part 2 (California Building Code); and
- San Diego County codes.

The CBO may deputize inspectors to carry out the functions of the code enforcement agency.

Verification: At least 30 days (or project owner- and CBO-approved alternative time frame) prior to the start of any increment of major piping or plumbing construction listed in the CBO-approved master drawing and master specifications list, the project owner shall submit to the CBO for design review and approval the final plans, specifications, and calculations, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with applicable LORS, and shall send the CPM a copy of the transmittal letter in the next monthly compliance report.

The project owner shall transmit to the CPM, in the monthly compliance report following completion of any inspection, a copy of the transmittal letter conveying the CBO's inspection approvals.

MECH-2 For all pressure vessels installed in the plant, the project owner shall submit to the CBO and California Occupational Safety and Health Administration (Cal-OSHA), prior to operation, the code certification papers and other documents required by applicable LORS. Upon completion of the installation of any pressure vessel, the project owner shall request the appropriate CBO and/or Cal-OSHA inspection of that installation.

The project owner shall:

1. Ensure that all boilers and fired and unfired pressure vessels are designed, fabricated, and installed in accordance with the appropriate section of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, or other applicable code. Vendor certification, with identification of applicable code, shall be submitted for prefabricated vessels and tanks; and

2. Have the responsible design engineer submit a statement to the CBO that the proposed final design plans, specifications, and calculations conform to all of the requirements set forth in the appropriate ASME Boiler and Pressure Vessel Code or other applicable codes.

Verification: At least 30 days (or project owner- and CBO-approved alternative time frame) prior to the start of on-site fabrication or installation of any pressure vessel, the project owner shall submit to the CBO for design review and approval, the above listed documents, including a copy of the signed and stamped engineer's certification, with a copy of the transmittal letter to the CPM.

The project owner shall transmit to the CPM, in the monthly compliance report following completion of any inspection, a copy of the transmittal letter conveying the CBO's and/or Cal-OSHA inspection approvals.

MECH-3 The project owner shall submit to the CBO for design review and approval the design plans, specifications, calculations, and quality control procedures for any heating, ventilating, air conditioning (HVAC) or refrigeration system. Packaged HVAC systems, where used, shall be identified with the appropriate manufacturer's data sheets.

The project owner shall design and install all HVAC and refrigeration systems within buildings and related structures in accordance with the CBC and other applicable codes. Upon completion of any increment of construction, the project owner shall request the CBO's inspection and approval of that construction. The final plans, specifications and calculations shall include approved criteria, assumptions, and methods used to develop the design. In addition, the responsible mechanical engineer shall sign and stamp all plans, drawings and calculations and submit a signed statement to the CBO that the proposed final design plans, specifications and calculations conform with the applicable LORS.

Verification: At least 30 days (or project owner- and CBO-approved alternative time frame) prior to the start of construction of any HVAC or refrigeration system, the project owner shall submit to the CBO the required HVAC and refrigeration calculations, plans, and specifications, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with the CBC and other applicable codes, with a copy of the transmittal letter to the CPM.

ELEC-1 Prior to the start of any increment of electrical construction for all electrical equipment and systems 110 Volts or higher (see a representative list, below) the project owner shall submit, for CBO design review and approval, the proposed final design, specifications, and calculations. Upon approval, the above listed plans, together with design changes and design change notices, shall remain on the site or at another accessible location for the operating life of the project. The project owner shall request that the CBO inspect the installation to ensure compliance with the requirements of applicable LORS. All transmission facilities (lines, switchyards, switching stations, and substations) are handled in conditions of certification in the **Transmission System Engineering** section of this document.

A. Final plant design plans shall include:

1. one-line diagram for the 13.8 kV, 4.16 kV and 480 V systems;
2. system grounding drawings;
3. lightning protection system; and
4. hazard area classification plan.

B. Final plant calculations must establish:

1. short-circuit ratings of plant equipment;

2. ampacity of feeder cables;

3. voltage drop in feeder cables;

4. system grounding requirements;

5. coordination study calculations for fuses, circuit breakers and protective relay settings for the 13.8 kV, 4.16 kV and 480 V systems;

6. system grounding requirements;

7. lighting energy calculations; and

8. 110 volt system design calculations and submittals showing feeder sizing, transformer and panel load confirmation, fixture schedules and layout plans.

C. The following activities shall be reported to the CPM in the monthly compliance report:

1. Receipt or delay of major electrical equipment;

2. Testing or energization of major electrical equipment; and

3. A signed statement by the registered electrical engineer certifying that the proposed final design plans and specifications conform to requirements set forth in the Energy Commission decision.

Verification: At least 30 days (or project owner- and CBO-approved alternative time frame) prior to the start of each increment of electrical construction, the project owner shall submit to the CBO for design review and approval the above listed documents. The project owner shall include in this submittal a copy of the signed and stamped statement from the responsible electrical engineer attesting compliance with the applicable LORS, and shall send the CPM a copy of the transmittal letter in the next monthly compliance report.

REFERENCES

PPEC 2011a – Pio Pico Energy Center (tn 59646). Application for Certification for Pio Pico Energy Center, Volumes 1 and 2, dated February 9, 2011, submitted to the CEC/Docket Unit on February 9, 2011.

GEOLOGY AND PALEONTOLOGY

Casey Weaver, CEG

SUMMARY OF CONCLUSIONS

The proposed Pio Pico Energy Center (PPEC) site is located in an active geologic area in Southern California approximately 17 miles southeast of the City of San Diego and 1½ miles north of the Mexican border. Because of its geologic setting, the site could be subject to intense levels of earthquake-related ground shaking. The closest known active fault is the Rose Canyon fault which is located 13.5 miles west of the proposed power plant (Figure 1). A potentially active fault (the La Nacion fault) is located approximately 6.5 miles from the proposed power plant site. The effects of strong ground shaking on the PPEC structures must be mitigated, to the extent practical, through structural designs required by the most recent edition of the California Building Code (CBC 2010). CBC 2010 requires that structures be designed to resist seismic stresses from ground acceleration and, to a lesser extent, liquefaction potential. A design-level geotechnical investigation required for the project by the CBC 2010, and proposed **Facility Design** Conditions of Certification **GEN-1**, **GEN-5** and **CIVIL-1**, would present standard engineering design requirements for mitigation of potential expansive clay soils, as well as excessive settlement due to compressible soils or dynamic compaction.

There are no known viable geologic or mineralogical resources at the proposed PPEC site (CDMG 1990). Numerous paleontological resources have been documented within 3 miles of the project, but no significant fossils were found during field explorations at the plant site or near ancillary facilities (PPEC 2011). Potential impacts to paleontological resources due to construction activities would be mitigated through worker training and monitoring by qualified paleontologists, as required by proposed Conditions of Certification, **PAL-1** through **PAL-7**.

Based on this information, the Energy Commission staff believes that the potential for significant adverse cumulative impacts to project facilities from geologic hazards during its design life is low. Similarly, staff believes the potential for significant adverse cumulative impacts to potential geological, mineralogical, and paleontological resources from the construction, operation, and closure of the proposed project, is low. It is staff's opinion that the proposed PPEC can be designed and constructed in accordance with all applicable laws, ordinances, regulations, and standards (LORS), and in a manner that both protects environmental quality and assures public safety, to the extent practical.

INTRODUCTION

In this section, California Energy Commission (Energy Commission) staff discusses the potential impacts of geologic hazards on the proposed PPEC facility as well as the PPEC's potential impact on geological, mineralogical, and paleontological resources. Staff's objective is to identify resources that could be negatively affected, evaluate the potential of the project construction and operation to impact the resources and provide mitigation measures as necessary to ensure that there would be no consequential adverse impacts to significant geological and paleontological resources during the

project construction, operation, and closure and to ensure that operation of the plant would not expose occupants to high-probability geologic hazards. A brief geological and paleontological overview is provided. The section concludes with staff's proposed monitoring and mitigation measures for geologic hazards and geological, mineralogical, and paleontological resources, with the proposed Conditions of Certification.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Applicable laws, ordinances, regulations and standards (LORS) are listed in the application for certification (AFC) (PPEC 2011). The following briefly describes the current LORS for both geologic hazards and resources and mineralogical and paleontological resources.

Geology and Paleontology Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
Federal	The proposed PPEC is not located on federal land. There are no federal LORS for geologic hazards and resources for this site.
State	
California Building Code (2010)	The California Building Code (CBC 2010) includes a series of standards that are used in project investigation, design, and construction (including seismicity, grading and erosion control). The CBC has adopted provisions in the International Building Code (IBC, 2009).
Alquist-Priolo Earthquake Fault Zoning Act, Public Resources Code (PRC), section 2621–2630	Mitigates against surface fault rupture of known active faults beneath occupied structures. Requires disclosure to potential buyers of existing real estate and a 50-foot setback for new occupied buildings.
The Seismic Hazards Mapping Act, PRC section 2690–2699	Areas are identified that are subject to the effects of strong ground shaking, such as liquefaction, landslides, tsunamis, and seiches.
Society for Vertebrate Paleontology (SVP), 1995	The "Measures for Assessment and Mitigation of Adverse Impacts to Non-Renewable Paleontological Resources: Standard Procedures" is a set of procedures and standards for assessing and mitigating impacts to vertebrate paleontological resources. The measures were adopted in October 1995 by the SVP, a national organization of professional scientists.
Local	
County of San Diego Grading Ordinance, section 87.430	May require paleontological monitor on grading sites located on county land. Discusses suspension of operations, notification of county officials, and recovery of paleontological resources, and resumption of operations.

Applicable Law	Description
County of San Diego	The county requires compliance with the seismic design criteria in the CBC (2010) and mitigation of geologic hazards associated with earthquakes according to the Seismic Hazards Mapping Act. Identification of and setback from faults that present potential surface rupture hazards are required, as set forth in the Alquist-Priolo Earthquake Zoning Act. The "Conservation Element" of the General Plan and Guidelines for Determining Significance address monitoring and collection of discovered resources on county lands.
San Diego County Draft General Plan, Conservation and Open Spaces elements, Goal COS-9 and Policy COS-0.1	Promotes conservation of paleontological resources within the county for educational and scientific purposes and requires salvage of paleontological resources in county-permitted projects.
County of San Diego General Plan, Part X, Conservation Element	Provides for protection of natural resources on County lands, including Unique Geological Features which includes fossiliferous formations.

SETTING

The proposed PPEC would be constructed on a previously graded, flat 10 acre site located in the unincorporated Otay Mesa area of San Diego County (Figure 2). An existing natural gas fired power plant (the 510 MW Otay Mesa Generating Project (OMGP)) is located adjacent to and east of the eastern PPEC property boundary.

The proposed project site comprises all of Assessor's Parcel Number (APN) 648-040-45. The proposed laydown area occupies approximately 6 acres of an adjacent parcel (APN 648-040-46) to the south.

As detailed in the Project Description Section of this PSA, the project will include the construction of the power plant, natural gas supply lines, sewer pipelines, storm water collection and conveyance features, power line towers and water supply pipelines.

REGIONAL SETTING

The PPEC site is located in the northern part of the Peninsular Ranges Geomorphic Province (Figure 3). Much of the Peninsular Ranges lies outside of California, continuing south nearly 800 miles as the peninsula of Baja California. This province is one of the largest geologic units in western North America. The province is bounded to the north by the Transverse Ranges and the Los Angeles Basin and on the east by the Colorado Desert and the Gulf of California. It varies in width from 30 to 100 miles and extends offshore into the Pacific Ocean. Within California, the highest elevations are found in the San Jacinto-Santa Rosa Mountains of the easternmost block, with San Jacinto Peak reaching 10,805 feet above mean sea level. The Peninsular Ranges' general cross-section resembles the Sierra Nevada, with each range having a gentle westerly slope and normally a steep eastern face. The western ranges slope progressively lower to the west along breaks produced by fault zones (Norris 1990).

Although not exposed within a two-mile radius of the project site, the region is underlain by Jurassic and Cretaceous plutonic rocks of the composite Peninsular Ranges Batholith, which contains screens (steeply dipping tabular bodies) of variably metamorphosed Mesozoic supracrustal rocks.

Late Jurassic and Early Cretaceous volcanic and volcaniclastic rocks represent an older, superjacent part of the Peninsular Ranges' magmatic arc. Early Cretaceous plutons intruded this Late Jurassic and Early Cretanceous island-arc assemblage; isotopic ages of the Early Cretaceous Santiago Peak Volcanics range from slightly older than to coeval with the intruded plutons. Unroofing of the westernmost part of the Peninsular Ranges Batholith had occurred by about 84 million years (Ma), the age of nonconformably overlying fossiliferous marine strata. By late Cretaceous time, the westernmost part of the Peninsular Ranges Batholith had undergone uplift, erosion to a surface of low relief, and marine inundation forming the San Diego embayment. Upper Cretaceous and Eocene marine and nonmarine strata were deposited widely on the eroded batholith, but no stratigraphic record is present for the Paleocene and early Eocene in the region. The upper Cretaceous strata were apparently uplifted and eroded prior to deposition of middle and upper Eocene rocks. Pliocene and Pleistocene coastal terrace deposits rest unconformably upon Tertiary rocks (Oligocene and Miocene) in this area (Todd 2004).

Sedimentary rocks deposited on the bedrock include three members of the Oligocene to Miocene-age Otay Formation and the younger San Diego Formation. The Otay Formation is an alluvial, fluvial, and lacustrine sedimentary deposit of late Oligocene age (Artim 1973; Walsh 1991). This rock unit has been divided into three subunits or members consisting of a lower angular conglomeratic member, a middle gritstone member, and an upper sandstone-mudstone member (Walsh 1991). The angular conglomerate member generally consists of light gray, poorly-sorted, coarse- grained, pebble to boulder conglomerate. The gritstone member generally consists of light brown, granule conglomerate and coarse-grained, poorly-sorted sandstone. The sandstone-mudstone member generally consists of light gray to white sandstone interbedded with brown to reddish brown claystone and lesser amounts of white and brown waxy bentonite.

The Pliocene-age San Diego Formation is poorly indurated, fine- to medium-grained sandstone that is typically yellowish light brown. These strata are characteristically weak and are susceptible to rapid erosion. These rocks are not exposed within the project area (Tan 2002; Kennedy 1977).

Quaternary deposits include alluvial sediments, landslide deposits, and active channel and wash sediments. The alluvial sediments consist of gravel, sand, silt, and clay ranging from older, well-consolidated material to younger, unconsolidated to poorly consolidated material.

PROJECT SITE DESCRIPTION

The PPEC site is located on the western slope of the San Ysidro Mountains, which is in the western portion of the Peninsular Range geomorphic province (Norris 1990) (Figure 3). The project would be constructed on an approximately 10 acre site located at the southeast quadrant of the intersection of Alta Road and Calzada de la Fuente in the unincorporated area of Otay Mesa (PPEC 2011) (Figure 2). The entire site and

surrounding area is located within an approved business park development. Extensive grading throughout the development has resulted in the construction of numerous cuts and fill pads. The eastern border of the property is defined by a cutslope approximately 30 feet high that slopes westerly at a grade of approximately 3:1. The northern, western and southern borders of the property are defined by developed, asphalt-paved streets.

As mentioned above, the PPEC site has been extensively graded and is entirely within a cut pad consisting of in-place Otay Formation sediments. The Otay Formation sediments consist of poorly indurated massive light-colored sandstone, siltstone and claystone interbedded with bentonite lenses. In the immediate PPEC area, the formation trends in a northwest to southeast direction and dips gently (about five degrees) toward the southwest. (CEC 2000)

No permanent surface water bodies are located on or adjacent to the power plant footprint. There are two ephemeral drainages that run by the site.

A geotechnical investigation has not yet been conducted for PPEC and a definitive depth to groundwater has not yet been determined. As part of the construction of the adjacent OMGP, soil borings were drilled in 1997 to a depth of 81.5 feet bgs and groundwater was not encountered in any of the OMGP borings (CEC 2000). Therefore, given the difference in elevation between the two sites, it is expected that groundwater occurs at a depth greater than 55 feet beneath the PPEC site.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

This section assesses two types of impacts. The first is the potential impacts the proposed facility could have on existing geological, mineralogical, and paleontological resources in the area. The second is geologic hazards, which could adversely affect the proper functioning of the proposed facility and create life/safety concerns.

METHOD FOR DETERMINING SIGNIFICANCE

The California Environmental Quality Act (CEQA) guidelines, Appendix G, provide a checklist of questions that lead agencies typically address when assessing impacts related to geological and mineralogical resources, and effects of geological hazards.

- Section (V) (c) includes guidelines that determine if a project will either directly or indirectly destroy a unique paleontological resource or site, or a unique geological feature.
- Sections (VI) (a), (b), (c), (d), and (e) focus on whether or not the project would expose persons or structures to geologic hazards.
- Sections (X) (a) and (b) concern the project's effects on mineral resources.

To assess potential impacts on unique geologic features and effects on mineral resources, staff has reviewed geologic and mineral resource maps for the surrounding area, as well as site-specific information provided by the applicant, to determine if geologic and mineralogic resources exist in the area.

To assess potential impacts on paleontological resources, staff reviewed existing paleontologic information and requested records searches from the San Bernardino

County Museum and the San Diego Natural History Museum for the surrounding area. The University of California (at Berkeley) Museum of Paleontology's website, which gives generalized information for locality records of their collection, was consulted as well (UCMP 2008). Site-specific information generated by the applicant for the proposed PPEC was also reviewed. All research was conducted in accordance with accepted assessment protocol (SVP 1995) to determine whether any known paleontological resources exist in the general area. If present or likely to be present, conditions of certification which outline required procedures to mitigate adverse affects to potential resources would be proposed as part of the project's approval.

The California Building Standards Code (CBSC) and CBC 2010 provide geotechnical and geological investigation and design guidelines, which engineers must follow when designing a facility. As a result, the criteria used to assess the significance of a geologic hazard include evaluating each hazard's potential impact on the design, construction, and operation of the proposed facility. Geologic hazards include faulting and seismicity, liquefaction, dynamic compaction, hydrocompaction, subsidence, expansive soils, landslides, tsunamis, seiches, and others as may be dictated by site-specific conditions.

DIRECT/INDIRECT IMPACTS AND MITIGATION

An assessment of the potential impacts to geological, mineralogical, and paleontological resources, and from geologic hazards is provided below. The assessment of impacts is followed by a summary of potential impacts that may occur during construction and operation of the project and provides recommended conditions of certification that would ensure potential impacts are mitigated to a level that is less than significant. The recommended conditions of certification would allow the Energy Commission's compliance project manager (CPM) and the applicant to adopt a compliance monitoring scheme ensuring ongoing compliance with LORS applicable to geologic hazards and the protection of geological, mineralogical, and paleontological resources.

GEOLOGIC AND MINERALOGIC RESOURCES

As of 2001, there was no oil, gas, or geothermal production in San Diego County (CDC 2010). No oil, gas, or geothermal fields are located in the area surrounding the project site (CDC 2001). The California Department of Gas and Geothermal Resources wildcat map showing wells not on field maps indicates that the closest exploration well to the project site is the Todd and Clark Number 1 well. This well is shown as "drilling – idle" and is approximately four miles northwest of the project site (CDC 2010). There is no indication that oil, gas, or geothermal resources underlie PPEC or the surrounding area.

Gold has been produced from several districts in the relatively low-lying mountain ranges of San Diego County. Free gold is associated with quartz-pyrite veins hosted in granitic and other igneous rocks. Some nickel, as well as gold, was extracted from quartz veins hosted in metamorphic rocks from the Julian Mining District, located approximately 30 miles east of Escondido. San Diego County is also famous for its gemstone mines. Many districts, including Pala, Rincon, Mesa Grande and Ramona, are located 30 to 35 miles northeast of the proposed PPEC site. World class specimens of tourmaline, beryl, kunzite (a variety of spodumene), garnet and topaz have been produced from pegmatite dikes that occur in granitic terrains (Norris and Webb, 1990). Pink varieties of these minerals are particularly common due to the abundance of

lithium, which has also been recovered from the area. Some of these mines are currently in operation, or provide mine tours for tourists.

According to San Diego County Department of Planning and Land Use, the project site is mapped as Mineral Resource Zone (MRZ) -3 (San Diego 2008). MRZ-3 areas contain known mineral deposits that may qualify as mineral resources. Further exploration work within these areas could result in the reclassification of specific localities into the MRZ-2 category. An MRZ-2 is an area that the State of California has determined adequate information exists to indicate that significant mineral deposits are present or where it is judged that a high likelihood of their presence exists (CDMG 1990).

The project is located on Otay Mesa which bounds the southern portion of the Otay River Valley. Portions of the Otay River Valley are identified as an MRZ-2 for aggregate. Construction aggregate is the most valuable mineral resource in the area. Rock Mountain is situated immediately north of Otay River and about four miles northwest of the project site. The quarry on the mountain is being mined for boulders, which are processed into crushed rock. In the long term, the local jurisdiction envisions that no mining, extraction, or processing facilities and/or activities will occur in this area.

Observations of soils in the 30 feet high cut slope on the eastern edge of the property and review of the descriptions of boring logs from the adjacent OMGP indicate site soils consist of gravelly silty clay. These site soils are not economically important as a mineral resource.

An occurrence of limestone known as the Kuebler Ranch marl is located just north of the project site (CDMG 1973). That site is also known as the McCarthy Ranch deposit. Other than this resource and construction aggregate in the Otay River Valley, no collectable or marketable minerals or metals are known to be present within two miles of the project site. Therefore, it is staff's opinion that collectable or marketable minerals or metals do not occur at the PPEC site.

Based on the information above, it is staff's opinion that the potential for significant adverse direct or indirect impacts from the project to potential geologic and mineralogic resources would be low.

PALEONTOLOGIC RESOURCES

Sedimentary deposits mapped as the Otay Formation underlie the entire project site, including all proposed linears (Tan 2002) (Figure 2). The sedimentary rocks of the Otay Formation preserve a unique record of the animals that lived in the ancient alluvial fan and floodplain paleo-environments of southwestern San Diego County. Prior to 1985, paleontologists had no knowledge of the fossil riches of the Otay Formation, but this all changed in 1986 when grading for the planned community of East Lake began (Deméré 1986). Earthmovers started exposing unweathered layers within the Otay Formation that contained well-preserved skeletal remains of ancient land mammals. At first, the fossils recovered were just small broken pieces of bone, but soon complete jaws and partial skulls were being found. Eventually, the fossil discoveries included partial and whole skeletons and an entirely new fossil fauna was recognized for the San Diego area. Although this fauna consists mostly of extinct land mammals, it also includes tortoise, lizard, and bird. The land mammals include exotic species of hedgehog, rhinoceros, and camel; as well as, gopher, squirrel, mouse, and several carnivores

including a small fox-like canid, a medium-sized short-faced dog, and a false-saber-toothed nimravid (Deméré 1988).

The most common fossils are remains of oreodonts, an extinct group of wholly North American hoofed mammals (ungulates) distantly related to camels and pigs. Remains of two distinct types of oreodonts have been found, one named *Mesoreodon* was the size of a domestic goat. The second species was a small animal named *Sespia californica*, which was about the size of a domestic cat. The large number of fossils of *Sespia* found in the Otay Formation suggests that this small herbivore probably lived in large herds. Peculiar grooves and pits on some oreodont long bones, as well as, repeating patterns of jaw bone breakage, suggest that oreodonts were important prey species to the ancient carnivore gild. The Otay Formation camel was small and llama-like and surprisingly similar to fossil camels found in Oligocene-aged sandstones of Wyoming and South Dakota. The rhinoceros remains found in the Otay Formation (*Subhyracodon* sp.) are very rare, and indicate an animal smaller and more slender than living species of rhinoceros. Enough fossils have been recovered from the Otay Formation that it is now considered to be the most productive source of late Oligocene land mammals in all of California.

The recovery of these Oligocene-age fossils represents an important contribution to the study of ancient life in southern California. The preservation of these fossils and their storage in perpetuity at the San Diego Natural History Museum will ensure their availability to future generations of citizens, students, and professional scientists.

No important paleontological resources were observed on the proposed PPEC site or at the off-site lay down area during the paleontological field survey conducted for the AFC (PPEC 2011). However, during construction of the Rowland-Otay Mesa Transfer project site, located approximately 1,300 feet to the southwest of the PPEC site, three general fossil localities were discovered in Otay Formation sediments during mass grading operations (Deméré 2007). Mammal bones and teeth, reptile remains, terrestrial invertebrates, algal cysts and freshwater snails were discovered.

Since the proposed PPEC site has already been graded, subsurface construction would be limited to foundation excavation and utility trenching. Based on the discoveries made at the nearby Auto Transfer facility, staff considers the probability that paleontological resources would be encountered during PPEC construction to be high in Otay Formation sediments. Construction of the proposed project would include grading, foundation excavation, and utility trenching. Staff considers the probability of encountering paleontological resources to be generally high on the proposed plant site and within soils excavated for buried pipelines connecting to the plant. No further potential for impacts would occur after the project is constructed and begins operation.

Proposed Conditions of Certification **PAL-1** to **PAL-7** are designed to mitigate any potential paleontological resource impacts, as discussed above, to a less than significant level. Essentially, these conditions would require a worker education program in conjunction with monitoring of proposed earthwork activities by qualified professional paleontologists (paleontologic resource specialist; PRS). Earthwork would be halted any time potential fossils are recognized by either the paleontologist or the worker. When properly implemented, the conditions of certification would yield a net gain to the science of paleontology since fossils that would not otherwise have been discovered

can be collected, identified, studied, and properly curated. A paleontological resource specialist would be retained for the proposed project by the applicant to produce a monitoring and mitigation plan, conduct the worker training, and provide the on-site monitoring. During the monitoring, the PRS can petition the CEC for a change in the monitoring protocol. Most commonly, this would be a request for lesser monitoring after sufficient monitoring has been performed to ascertain that there is little chance of finding significant fossils. In other cases, the PRS can propose increased monitoring due to unexpected fossil discoveries or in response to repeated out-of-compliance incidents by the earthwork contractor.

GEOLOGICAL HAZARDS

The AFC (PPEC 2011) provides documentation of potential geologic hazards at the proposed PPEC plant site, although no site-specific subsurface information was available at the time the AFC was submitted. Review of the AFC, coupled with staff's independent research, indicates that the possibility of geologic hazards at the plant site, during its practical design life, would be low. However, geologic hazards, such as potential for expansive clay soils and settlement due to compressible soils and dynamic compaction, would need to be addressed in a project geotechnical report per CBC 2010 requirements.

Staff's independent research included the review of available geologic maps, reports, and related data of the proposed PPEC plant site. Geological information was available from the California Geological Survey (CGS), California Division of Mines and Geology (CDMG), and other governmental organizations. Since 2002, the CDMG has been known as the California Geologic Survey. Staff's analysis of this information is provided below.

Faulting and Seismicity

The PPEC site is located in southwestern California in an area that is tectonically dominated by translational slippage between the North American and Pacific crustal plates. On a broad scale, the North American-Pacific tectonic plate boundary in California is a transform fault (the San Andreas fault) that extends from the Gulf of California to Cape Mendocino. The transform fault boundary may better be considered a fault system composed of numerous fault zones within this plate boundary (Marshall 2006).

The San Andreas fault system consists of several nearly parallel strike-slip faults. These faults generally run in a northwest-southeast direction and are the product of shear between the Pacific and North American lithospheric plates. From east to west the major active faults consist of the San Andreas, San Jacinto, Elsinore, La Nacion, and Rose Canyon faults onshore and the Coronado Bank, San Diego Trough, and San Clemente faults offshore (Figure 1). Often the traces of these faults are marked by river valleys and canyons such as in the Lake Henshaw area where the Elsinore Fault passes along the northeast shore of the lake, or in Balboa Park where the small Florida Canyon Fault passes along the western slope of the canyon and beneath the parking lot of the Naval Hospital.

With increasing distance west of the San Andreas, the continental crust becomes more a part of the Pacific plate and shares its northwesterly absolute motion. Of the about 50

millimeters per year (mm/y) of relative motion between the North American and Pacific Plates, 30 mm/y occurs on the San Andreas, 12 mm/y on the San Jacinto, 5 mm/y on the Elsinore, 1-2 mm/y on the Rose Canyon, and the remainder on the off-shore faults (Marshall 2006). This process of translating and rifting Southern California away from North America has extended over the last 5 thousand years and has produced a very complicated geology in Southern California--which, at the least, involves many northwest-trending right lateral and northeast-trending left lateral strike slip faults, transpressional mountain ranges, and transtensional basins or rhombochasms.

While all of the faults mentioned above have a potential to affect the site, due to their recency of activity and proximity to the project site, the Rose Canyon fault zone and the Coronado Bank fault zone are the most likely sources of seismicity. The La Nacion fault system is also discussed here due to its proximity to the project site and its potential (albeit less) for activity.

The Rose Canyon fault zone exhibits right-lateral strike-slip movement. The mapped segment of the Rose Canyon fault zone is about 19 miles long. However, this segment is essentially continuous with the Newport Inglewood fault zone, resulting in an effective length of at least 145 miles (Toppozada 1989).

The most recent surface rupture of the fault zone occurred during Holocene time. The slip rate is about 0.04 inches per year, but it may be greater if unmeasured parallel segments carry a substantial amount of slip (SCEC 2010a). The Rose Canyon fault zone is about 13.5 miles west of the project site.

The Coronado Bank fault zone exhibits right-lateral and normal faulting movement. The fault zone is at least 56 miles long and is essentially continuous with the Palos Verdes fault zone, resulting in an effective length of at least 112 miles. The most recent surface rupture of the fault zone occurred during Holocene time. The slip rate is roughly 0.08 inches per year (SCEC 2010b). The Coronado Bank fault zone is approximately 40 miles west of the project site.

The La Nacion fault system is a series of moderate- to high-angle normal faults striking north roughly parallel to the coastline and is traceable by surface features for more than 20 miles north of the U.S.-Mexico border. The fault system occurs in locally folded Tertiary and Quaternary sedimentary rocks. Vertical offset of Pleistocene sediments is as much as 280 feet on a given fault branch and, for the fault system, it may be as much as 390 feet. Geophysical evidence suggests the total offset for the fault system is approximately 1,640 feet. Offset of alluvium has been proven at two localities, and unexplained local seismic activity may be associated with the La Nacion fault system (Artim 1973). The La Nacion fault system is approximately 6 1/2 miles west of the project site.

No faults were identified within two miles of the project site (Artim 1973; CDMG 2000; Tan 2002).

The Alquist-Priolo Earthquake Fault Zoning Act of 1994 (formerly known as the Alquist-Priolo Special Studies Zone Act of 1972) stipulates that no structure for human occupancy may be built within an Earthquake Fault Zone until geologic investigations demonstrate that the site is free of fault traces that are likely to rupture with surface

displacement. Earthquake Fault Zones include faults considered to have been active during Holocene time and to have a relatively high potential for surface rupture (CDMG, 2000). No active faults are shown on published maps as crossing the boundary of new construction on the proposed PPEC power plant site or associated linear facilities.

Similar to the rest of southern California, San Diego County has a number of sources of seismicity. Since 1984 earthquake activity in San Diego County has doubled over that of the preceding 50 years (Deméré 2011). The strongest recorded quake (seismographs were not developed until 1934) in coastal San Diego County was the M5.3 temblor that occurred on 13 July 1986 on the Coronado Bank Fault, 25 miles offshore of Solana Beach.

Historic documents record that a very strong earthquake struck San Diego on 27 May 1862, damaging buildings in Old Town and opening up cracks in the earth near the San Diego River mouth. This destructive temblor was centered on either the Rose Canyon or Coronado Bank faults and descriptions of damage suggest that it had a magnitude of about 6.0 (Deméré 2011).

In recent years there have been several earthquakes recorded within the Rose Canyon Fault Zone as it passes beneath the city. Three temblors shook the city on 17 June 1985 (M3.9, 4.0, 3.9) and a stronger quake occurred on 28 October 1986 (M4.7). (Deméré 2011).

Recent studies indicate the San Jacinto fault may pose a bigger risk to San Diego than the San Andreas because it is located further west (closer) than the San Andreas. The system produced a 5.4 quake last year that might have been an aftershock of the April 4, 2010, El Mayor-Cucapah quake. (Robbins 2011). The M7.3 El Mayor-Cucapah quake was the largest seismic event in 120 years on this part of the plate boundary. Additionally, this earthquake emphasizes the need to consider complex networks of small faults that can link together to generate large earthquakes (Robbins 2011).

Ongoing field and laboratory studies suggest the following maximum likely magnitudes for local faults: San Jacinto (M6.4 to 7.3), Elsinore (M6.5 to 7.3), Rose Canyon (M6.2 to 7.0), La Nacion (M6.2 to 6.6), Coronado Bank (M6.0 to 7.7), San Diego Trough (M6.1 to 7.7), San Clemente (M6.6 to 7.7) (Deméré 2011).

Table 2 summarizes the historical seismicity in the region between 1800 and April 2010 based on the California Historical Earthquake Online Database and U.S. Geological Survey data (USGS, 2010a). The project site latitude and longitude inputs were 32.574 degrees north and 116.918 degrees west, respectively. Fourteen earthquakes with magnitudes greater than or equal to 5.5 were identified within a 62-mile (100-km) search radius. The largest of these earthquakes was a magnitude 6.6 event that occurred about 62 miles northeast of the project site) on April 9, 1968. The closest of these earthquakes were a magnitude 6.2 event, which occurred about 13 miles west of the project site, and a magnitude 5.8 and a magnitude 6.1 event, which occurred within about 17 miles of the project site on June 25, 1863 and October 23, 1894, respectively.

Seismically induced ground shaking is the most substantial geologic hazard for PPEC. According to the CBC 2010, all of San Diego County is within Seismic Zone 4 (considered to be the highest seismic hazard) and, like most of Southern California, is subject to strong ground shaking (San Diego 2010a).

Preliminary estimates of ground motion based on probabilistic seismic hazard analyses have been calculated for the project site using the USGS Earthquake Hazards application called the U.S. Seismic "DesignMaps" Web Application (**Table 3**). This application produces seismic hazard curves, uniform hazard response spectra, and seismic design values. The values provided by this application are based upon data from the 2002 (and 1996) USGS National Seismic Hazard Mapping Project. These design parameters are for use with the 2009 (same as 2006) International Building Code, the 2005 ASCE-7 Standard, the 2003 NEHRP Recommended Provisions, and their respective predecessors.

Geology and Paleontology Table 2
MAGNITUDE 5.5 AND GREATER EARTHQUAKES OCCURING BETWEEN 1800 AND APRIL 2010 WITHIN 62 MILES (100 KM) OF THE PROJECT SITE

Catalog	Date	Latitude (Degrees North)	Longitude (Degrees West)	Magnitude	Distance (Miles)	Direction
California Historical Earthquake Online Database	November 22, 1800	32.90	117.80	6.3	57	Northwest
	May 5,1803	32.80	117.10	5.5	19	Northwest
	September 21, 1856	33.10	116.70	5.5	38	Northeast
	May 27, 1862	32.55	117.15	6.2	13	West
	June 25, 1863	32.40	117.10	5.8	17	Southwest
	September 13, 1885	33.30	116.90	5.8	50	North
	May 28, 1892	33.20	116.20	6.5	60	Northeast
	October 23, 1894	32.80	116.80	6.1	17	Northeast
	October 21, 1942	32.97	116.00	6.4	60	Northeast
	November 4, 1949	32.20	116.55	5.7	33	Southeast
	December 22, 1964	31.80	117.10	5.6	55	Southwest
	April 9, 1968	33.19	116.13	6.6	62	Northeast
	April 28, 1969	33.34	116.35	5.8	62	Northeast
	July 13, 1986	32.97	117.87	5.8	61	Northwest

Source: PPEC 2011

These parameters are project-specific and, based on PPEC's location, were calculated using latitude and longitude inputs of 32.574 degrees north and 116.918 degrees west, respectively. Other inputs for this application are the site "type" which is based on the underlying geologic materials and the "Structure Risk Category". The assumed site class for PPEC is "C", which is applicable to dense soil and soft rock. These parameters can be updated as appropriate following the results presented in a geotechnical investigation report performed for the site. The assumed "Structure Risk Category" is "III", which is based on its inherent risk to people and the need for the structure to function following a damaging event. Risk categories range from I (non essential) to IV (critical). Examples of risk category I include agriculture facilities, minor

storage facilities, etc., while examples of category IV include fire stations, hospitals, nuclear power facilities, etc.

The ground acceleration values presented in **Table 3** are typical for the area. Other developments in the adjacent area will also be designed to accommodate strong seismic shaking. The potential for and mitigation of the effects of strong seismic shaking during an earthquake should be addressed in a project-specific geotechnical report, per CBC 2010 requirements, and proposed **Facility Design** Conditions of Certification **GEN-1**, **GEN-5** and **CIVIL-1**. Compliance with these conditions of certification would ensure the project is built to current seismic standards and potential impacts would be mitigated in accordance with current standards of engineering practice.

Geology and Paleontology Table 3
PLANNING LEVEL 2010 CBC SEISMIC DESIGN PARAMETERS MAXIMUM CONSIDERED EARTHQUAKE, ASCE 7 STANDARD

Parameter	Value
Assumed Site Class	C
Structure Risk Category	III - Substantial
SS – Mapped Spectral Acceleration, Short (0.2 Second) Period	0.798 g
S1 – Mapped Spectral Acceleration, Long (1.0 Second) Period	0.307 g
Fa – Site Coefficient, Short (0.2 Second) Period	1.081
Fv – Site Coefficient, Long (1.0 Second) Period	1.493
SDS – Design Spectral Response Acceleration, Short (0.2 Second) Period	0.575 g
SD1 – Design Spectral Response Acceleration, Long (1.0 Second) Period	0.306 g
SMS – Spectral Response Acceleration, Short (0.2 Second) Period	0.862 g
SM1 – Spectral Response Acceleration, Long (1.0 Second) Period	0.458 g

ASCE = American Society of Civil Engineers
Values from USGS 2010b

Liquefaction

Liquefaction is a phenomenon whereby loose, saturated, granular soils lose their inherent shear strength because of excess pore water pressure build-up, such as that generated during repeated cyclic loading from an earthquake. A low relative density of the granular materials, shallow groundwater table, long duration, and high acceleration of seismic shaking are some of the factors favorable to cause liquefaction.

The presence of predominantly cohesive or fine-grained materials and/or absence of saturated conditions can preclude liquefaction. Liquefaction hazards are usually manifested in the form of buoyancy forces during liquefaction, increase in lateral earth pressures due to liquefaction, horizontal and vertical movements resulting from lateral spreading, and post-earthquake settlement of the liquefied materials.

The depth to ground water on the proposed PPEC site is not known. Based on borings drilled on an adjacent property, groundwater is expected to be encountered at a depth greater than 80 feet below ground surface (CEC 2000).

Based on site observations and review of information obtained from studies conducted on neighboring property, subsurface conditions at the site are not likely to be conducive to liquefaction. However, ground water levels should be confirmed, and the liquefaction

potential on the proposed PPEC site should be addressed in a project-specific geotechnical report, per CBC 2010 requirements and proposed **Facility Design** Conditions of Certification **GEN-1**, **GEN-5** and **CIVIL-1**.

Lateral Spreading

Lateral spreading of the ground surface can occur within liquefiable beds during seismic events. Lateral spreading generally requires an abrupt change in slope, such as a nearby steep hillside or deeply eroded stream bank, but can also occur on gentle slopes. Other factors such as distance from the epicenter, magnitude of the seismic event, and thickness and depth of liquefiable layers also affect the amount of lateral spreading. The PPEC site is underlain by predominantly unsaturated, cohesive, fine-grained materials that are not typically associated with liquefaction. However, ground water levels should be confirmed and the liquefaction potential of underlying beds beneath the proposed PPEC site should be addressed in a project-specific geotechnical report, per CBC 2010 requirements and proposed **Facility Design** Conditions of Certification **GEN-1**, **GEN-5** and **CIVIL-1**.

Dynamic Compaction

Dynamic compaction of soils results when relatively unconsolidated granular materials experience vibration associated with seismic events. The vibration causes a decrease in soil volume, as the soil grains tend to rearrange into a more dense state (an increase is soil density). The decrease in volume can result in settlement of overlying structural improvements.

The potential for and mitigation of the effects of dynamic compaction of proposed site native and fill soils during an earthquake should be addressed in a project-specific geotechnical report, per CBC 2010 requirements and proposed **Facility Design** Conditions of Certification **GEN-1**, **GEN-5** and **CIVIL-1**. Common mitigation methods would include deep foundations (driven piles; drilled shafts) for severe conditions, geogrid reinforced fill pads for moderate severity and over-excavation and replacement for areas of minimal hazard.

Hydrocompaction

Hydrocompaction (also known as hydro-collapse) is generally limited to young soils that were deposited rapidly in a saturated state, most commonly by a flash flood. The soils dry quickly, leaving an unconsolidated, low density deposit with a high percentage of voids. Foundations built on these types of compressible materials can settle excessively, particularly when landscaping irrigation dissolves the weak cementation that is preventing the immediate collapse of the soil structure. Soils underlying PPEC are Oligocene in age (23 – 34 million years before present) and are therefore, not considered “young”. Additionally they are dense clay-rich soils which are not associated with hydrocompaction hazards. Therefore, staff considers the potential for the site to be affected by hydrocompaction to be low, the potential for and mitigation of the effects of hydrocompaction of site soils should be addressed in a project-specific geotechnical report, per CBC 2010 requirements and proposed **Facility Design** Conditions of Certification **GEN-1**, **GEN-5** and **CIVIL-1**. Typical mitigation measures would include over-excavation/replacement, mat foundations or deep foundations, depending on severity and foundation loads.

Subsidence

Local subsidence or settlement may occur when areas containing compressible soils are subjected to foundation loads. Due to the competent, dense clayey soils underlying the PPEC site, staff considers the potential for the site to be affected by subsidence to be low. However,the potential for and mitigation of the effects of local subsidence due to compressible soils on the site should be addressed in a project-specific geotechnical report, per CBC 2010 requirements and proposed **Facility Design** Conditions of Certification **GEN-1**, **GEN-5** and **CIVIL-1**. Mitigation would normally be accomplished by over-excavation and replacement of the compressible soils. For deep-seated conditions, deep foundations are commonly used.

Regional ground subsidence is typically caused by petroleum or ground water withdrawal that increases the effective unit weight of the soil profile, which in turn increases the effective stress on the deeper soils. This results in consolidation or settlement of the underlying soils. The nearest known producing petroleum or gas fields are located in the Los Angeles Basin roughly 85 miles northwest of the project site (CDC 2001). Ground water levels would be unlikely to fluctuate significantly from current levels due to lack of exploitation of the groundwater resources. No subsidence resulting from fluid extraction in the area would be anticipated.

Subsidence occurs when a large portion of land is displaced vertically, usually due to the withdrawal of groundwater, oil, or natural gas from certain types of rocks, such as fine-grained sediments. The rock compacts because the water is partly responsible for holding the ground up. There is no record of this hazard in the region (San Diego 2010b).

Settlement can occur in poorly consolidated soils during ground shaking. Earthquake-induced settlement can cause distress to structures supported on shallow foundations, damage to utilities that serve pile-supported structures, and damage to utility lines that are commonly buried at shallow depths (Kramer 1996). During settlement, the soil materials are physically rearranged by the shaking to result in a less stable alignment of the individual grains. Settlement of sufficient magnitude to cause significant structural damage is normally associated with rapidly deposited alluvial soils, or improperly founded or poorly compacted fill.

Native site soils are dense and are not subject to subsidence or seismically induced settlement. Properly controlled engineered fills founded on dense native soils will not be subject to subsidence or seismically induced settlement.

Expansive Soils

Soil expansion occurs when clay-rich soils with an affinity for water exist in-place at a moisture content below their plastic limit. The addition of moisture from irrigation, precipitation, capillary tension, water line breaks, etc. causes the clay soils to absorb water molecules into their structure, which in turn causes an increase in the overall volume of the soil. This increase in volume can correspond to excessive movement (heave) of overlying structural improvements. The potential for and mitigation of the effects of expansive soils on the proposed site should be addressed in a project-specific geotechnical report, per CBC 2010 requirements and proposed **Facility Design** Conditions of Certification **GEN-1**, **GEN-5** and **CIVIL-1**. Mitigation would normally be

accomplished by over-excavation and replacement of the collapsible soils. For deep-seated conditions, deep foundations are commonly used. Lime-treated (chemical modification) is often used to mitigate expansive clays in pavement areas.

Expansive soils are those that greatly increase in volume when they absorb water and shrink when they dry out. Expansion is measured by shrink-swell potential, which is relative volume change in soil with a gain in moisture. Soils with a moderate to high shrink-swell potential may damage buildings, roads, and other structures built on them.

Expansive soils present a minor threat to limited portions of San Diego County (San Diego 2010b). Expansive soils are possible at the project site due to the localized interbeds of bentonite clay in the Otay Formation. The determination of presence and mitigation for onsite expansive soils should be addressed in a project specific geotechnical report.

Landslides

Landslides occur when masses of rock, earth, or debris move down a slope, including rock falls, deep failure of slopes, and shallow debris flows. Landslides are influenced by human activity (mining and construction of buildings, railroads, and highways) and natural factors (geology, precipitation, and topography). Frequently, they accompany other natural hazards. Although landslides sometimes occur during earthquake activity, earthquakes are rarely their primary cause.

The most common cause of a landslide is an increase in the down slope gravitational stress applied to slope materials (oversteepening). This may be produced either by natural processes or human activities. Undercutting of a valley wall by stream erosion is a common way in which slopes may be naturally oversteepened. Other ways include excessive rainfall or irrigation on a cliff or slope.

Another type of soil failure is slope wash, the erosion of slopes by surface-water runoff. The intensity of slope wash depends on the discharge and velocity of surface runoff and on the resistance of surface materials to erosion. Surface runoff and velocity are increased in urban and suburban areas due to the presence of roads, parking lots, and buildings, which have lower infiltration capacities and provide generally smooth surfaces that accelerate runoff.

Mudflows are another type of soil failure and are defined as flows or rivers of liquid mud down a hillside. They occur when water accumulates under the ground, usually following long and heavy rainfall. If there is no brush, tree, or ground cover to hold the soil, mud can flow down-slope (San Diego 2010b).

Landslides tend to be more widespread in areas where the underlying sedimentary formations contain weak claystone beds that are more susceptible to sliding. A small landslide within the Otay and San Diego Formations is mapped about 2 miles west of the project site on the south side of the Otay Valley (Tan 2002). No other landslides have been identified within two miles of the project site. The project-specific engineering geology report should verify that landslide potential would be minimal, in accordance with the requirements of the CBC 2010 and proposed **Facility Design** Conditions of Certification **GEN-1**, **GEN-5** and **CIVIL-1.**

Flooding

The Federal Emergency Management Agency (FEMA) has delineated inundation areas for 100-and 500- year floods. According to the FEMA Flood Insurance Rate Maps, the project site and linears are not within an area identified as having flood hazards (FEMA, 1997). For further analysis see the Soil and Water Resources section.

Tsunamis and Seiches

Tsunamis are large-scale seismic-sea waves caused by offshore earthquakes, landslides and/or volcanic activity. Seiches are waves generated within enclosed water bodies such as bays, lakes or reservoirs caused by seismic shaking, rapid tectonic uplift, basin bottom displacement and/or landsliding. The proposed PPEC power plant site is located approximately 10 miles inland from the coast and at an elevation of 635 feet above mean sea level. There are no water bodies located at an elevation above the project site within the project vicinity. Therefore, the site is not subject to either tsunami of seiche hazards. For further analysis see the **Soil and Water Resources** section.

The design-level geotechnical investigation required for the proposed project by the CBC 2010 and proposed **Facility Design** Conditions of Certification **GEN-1**, **GEN-5** and **CIVIL-1** should provide standard engineering design recommendations for mitigation of potential expansive clay soils, liquefaction and excessive settlement due to compressible soils or dynamic compaction, as appropriate.

OPERATION IMPACTS AND MITIGATION

Operation of the proposed plant facilities should not have any adverse impact on geological, mineralogical, or paleontological resources. Once the plant is constructed and operating, there would be no further disturbances that could affect these resources.

Potential geologic hazards, including strong ground shaking; liquefaction; settlement due to compressible soils, hydrocompaction, or dynamic compaction, and the possible presence of expansive clay soils can be effectively mitigated through facility design such that these potential hazards should not affect future operation of the facility. Compliance with **Conditions of Certification GEN-1, GEN-5** and **CIVIL-1** in the **Facility Design** section would ensure the project is constructed to current seismic building standards and potential impacts would be mitigated in accordance with current standards of engineering practice.

CUMULATIVE IMPACTS AND MITIGATION

No geological and mineralogical resources (sand and gravel) have been identified in the project area. The site has not been identified as a significant mineral deposit that should be protected and is 3 miles from the closest identified mineral resource. Development of this 10 acre parcel is not expected to lead to a significantly cumulative effect on geologic and mineralogical resources within the project area.

Paleontological resources have been documented in the general area of the proposed project and in sediments similar to those that are present on the site. However, to date, none have been found on the plant site or along project linear routes during cursory field studies of the PPEC. If significant paleontological resources are uncovered during

construction they would be protected and preserved in accordance with Conditions of Certification **PAL-1** to **PAL-7**. These conditions would also mitigate any potential cumulative impacts.

The proposed PPEC would be situated in an active geologic environment. Strong ground shaking potential must be mitigated through foundation and structural design as required by the CBC 2010. Expansive materials, as well as compressible soils and soils that may be subject to subsidence due to dynamic compaction, must be mitigated in accordance with a design-level geotechnical investigation as required by the CBC 2010, and proposed Conditions of Certification **GEN-1, GEN-5, and CIVIL-1** under **Facility Design**.

FACILITY CLOSURE

Future facility closure activities would not be expected to impact geological or mineralogical resources since no such resources are known to exist at either the project location or along its proposed linears. In addition, the decommissioning and closure of the proposed project should not negatively affect geologic, mineralogic, or paleontologic resources since the majority of the ground disturbed during plant decommissioning and closure would have been already disturbed, and mitigated as required, during construction and operation of the project.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Staff has not received any agency or public comments regarding geologic hazards, geologic or mineral resources, or paleontology at this time.

CONCLUSIONS

The applicant would be able to comply with applicable LORS, provided that the proposed Conditions of Certification are followed. The proposed design and construction of the project should have no adverse impact with respect to geological, mineralogical, and paleontological resources. Staff proposes to ensure compliance with applicable LORS through the adoption of the proposed Conditions of Certification listed below.

PROPOSED CONDITIONS OF CERTIFICATION

General Conditions of Certification with respect to engineering geology are proposed under Conditions of Certification **GEN-1, GEN-5, and CIVIL-1** in the **FACILITY DESIGN** section. Proposed paleontological Conditions of Certification follow in **PAL-1** through **PAL-7**. It is staff's opinion that the likelihood of encountering paleontological resources would be high in the project's foundation and pipeline excavations. Staff would consider reducing monitoring intensity, at the recommendation of the project PRS, following examination of sufficient, representative deep excavations to fully understand site stratigraphy.

PAL-1 The project owner shall provide the Compliance Project Manager (CPM) with the resume and qualifications of its Paleontological Resource Specialist

(PRS) for review and approval. If the approved PRS is replaced prior to completion of project mitigation and submittal of the Paleontological Resources Report, the project owner shall obtain CPM approval of the replacement PRS. The project owner shall keep resumes on file for qualified Paleontological Resource Monitors (PRMs). If a PRM is replaced, the resume of the replacement PRM shall also be provided to the CPM for review and approval.

The PRS resume shall include the names and phone numbers of references. The resume shall also demonstrate to the satisfaction of the CPM the appropriate education and experience to accomplish the required paleontological resource tasks.

As determined by the CPM, the PRS shall meet the minimum qualifications for a vertebrate paleontologist as described in the Society of Vertebrate Paleontology (SVP) guidelines of 1995. The experience of the PRS shall include the following:

1. Institutional affiliations, appropriate credentials, and college degree;

2. Ability to recognize and collect fossils in the field;

3. Local geological and biostratigraphic expertise;

4. Proficiency in identifying vertebrate and invertebrate fossils; and

5. At least three years of paleontological resource mitigation and field experience in California and at least one year of experience leading paleontological resource mitigation and field activities.

The project owner shall ensure that the PRS obtains qualified paleontological resource monitors to monitor as he or she deems necessary on the project. Paleontologic Resource Monitors (PRMs) shall have the equivalent of the following qualifications:

- BS or BA degree in geology or paleontology and one year of experience monitoring in California; or
- AS or AA in geology, paleontology, or biology and four years' experience monitoring in California; or
- Enrollment in upper division classes pursuing a degree in the fields of geology or paleontology and two years of monitoring experience in California.

Verification: At least 60 days prior to the start of ground disturbance, the project owner shall submit a resume and statement of availability of its designated PRS for on-site work.

At least 20 days prior to ground disturbance, the PRS or project owner shall provide a letter with resumes naming anticipated monitors for the project, stating that the identified monitors meet the minimum qualifications for paleontological resource monitoring required by the condition. If additional monitors are obtained during the project, the PRS

shall provide additional letters and resumes to the CPM. The letter shall be provided to the CPM no later than one week prior to the monitor's beginning on-site duties.

Prior to the termination or release of a PRS, the project owner shall submit the resume of the proposed new PRS to the CPM for review and approval.

PAL-2 The project owner shall provide to the PRS and the CPM, for approval, maps and drawings showing the footprint of the power plant, construction lay down areas, and all related facilities. Maps shall identify all areas of the project where ground disturbance is anticipated. If the PRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the PRS and CPM. The site grading plan and plan and profile drawings for the utility lines would be acceptable for this purpose. The plan drawings should show the location, depth, and extent of all ground disturbances and be at a scale between 1 inch = 40 feet and 1 inch = 100 feet range. If the footprint of the project or its linear facilities change, the project owner shall provide maps and drawings reflecting those changes to the PRS and CPM.

If construction of the project proceeds in phases, maps and drawings may be submitted prior to the start of each phase. A letter identifying the proposed schedule of each project phase shall be provided to the PRS and CPM. Before work commences on affected phases, the project owner shall notify the PRS and CPM of any construction phase scheduling changes.

At a minimum, the project owner shall ensure that the PRS or PRM consults weekly with the project superintendent or construction field manager to confirm area(s) to be worked the following week, and until ground disturbance is completed.

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall provide the maps and drawings to the PRS and CPM.

If there are changes to the footprint of the project, revised maps and drawings shall be provided to the PRS and CPM at least 15 days prior to the start of ground disturbance.

If there are changes to the scheduling of the construction phases, the project owner shall submit a letter to the CPM within 5 days of identifying the changes.

PAL-3 Prior to ground disturbance, the project owner shall ensure that the PRS prepares, and the project owner submits to the CPM for review and approval, a paleontological resources monitoring and mitigation plan (PRMMP) to identify general and specific measures to minimize potential impacts to significant paleontological resources. The PRMMP shall function as the formal guide for monitoring, collecting, and sampling activities, and may be modified with CPM approval. This document shall be used as the basis of discussion when on-site decisions or changes are proposed. Copies of the PRMMP shall reside with the PRS, each monitor, the project owner's on-site manager, and the CPM.

The PRMMP shall be developed in accordance with the guidelines of the Society of Vertebrate Paleontology (SVP, 1995) and shall include, but not be limited, to the following:

1. Assurance that the performance and sequence of project-related tasks, such as any literature searches, pre-construction surveys, worker environmental training, fieldwork, flagging or staking, construction monitoring, mapping and data recovery, fossil preparation and collection, identification and inventory, preparation of final reports, and transmittal of materials for curation will be performed according to PRMMP procedures;

2. Identification of the person(s) expected to assist with each of the tasks identified within the PRMMP and the Conditions of Certification;

3. A thorough discussion of the anticipated geologic units expected to be encountered, the location and depth of the units relative to the project when known, and the known sensitivity of those units based on the occurrence of fossils either in that unit or in correlative units;

4. An explanation of why, how, and how much sampling is expected to take place and in what units. Include descriptions of different sampling procedures that shall be used for fine-grained and coarse-grained units;

5. A discussion of the locations of where the monitoring of project construction activities is deemed necessary, and a proposed plan for monitoring and sampling;

6. A discussion of procedures to be followed in the event of a significant fossil discovery, halting construction, resuming construction, and how notifications will be performed;

7. A discussion of equipment and supplies necessary for collection of fossil materials and any specialized equipment needed to prepare, remove, load, transport, and analyze large-sized fossils or extensive fossil deposits;

8. Procedures for inventory, preparation, and delivery for curation into a retrievable storage collection in a public repository or museum, which meet the Society of Vertebrate Paleontology's standards and requirements for the curation of paleontological resources;

9. Identification of the institution that has agreed to receive data and fossil materials collected, requirements or specifications for materials delivered for curation, and how they will be met, and the name and phone number of the contact person at the institution; and

10. A copy of the paleontological Conditions of Certification.

Verification: At least 30 days prior to ground disturbance, the project owner shall provide a copy of the PRMMP to the CPM for review and approval. The PRMMP shall include an affidavit of authorship by the PRS, and acceptance of the PRMMP by the project owner evidenced by a signature

PAL-4 Prior to ground disturbance, the project owner shall prepare and submit a Worker Environmental Awareness Program (WEAP) to the CPM for review and approval. The WEAP shall address the possibility of encountering paleontological resources in the field, the sensitivity and importance of these resources, and legal obligations to preserve and protect those resources.

For the duration of construction activities involving ground disturbance, the project owner and the PRS shall conduct weekly CPM-approved training for the following workers: project managers, construction supervisors, foremen and general workers involved with or who operate ground-disturbing equipment or tools.

Worker training shall consist of an initial in-person PRS training during the project kick-off, for those mentioned above. Following initial training, a CPM-approved video or in-person training may be used for new employees. The training program may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or other areas of interest or concern. The training shall include:

1. A discussion of applicable laws and penalties under the law;
2. Good quality photographs or physical examples of vertebrate fossils for project sites containing units of high paleontological sensitivity;
3. Information that the PRS or PRM has the authority to halt or redirect construction in the event of a discovery or unanticipated impact to a paleontological resource;
4. Instruction that employees are to halt or redirect work in the vicinity of a find and to contact their supervisor and the PRS or PRM;
5. An informational brochure that identifies reporting procedures in the event of a discovery;
6. A WEAP certification of completion form signed by each worker indicating that he/she has received the training; and
7. A sticker that shall be placed on hard hats indicating that environmental training has been completed.

As part of this condition, workers shall not excavate in sensitive units prior to receiving CPM-approved worker training.

Verification: At least 30 days prior to ground disturbance, the project owner shall submit the proposed WEAP, including the brochure, with the set of reporting procedures for workers to follow to the CPM for review and approval.

At least 30 days prior to ground disturbance, the project owner shall submit the scriptand final video to the CPM for review and approval if the project owner is planning to use a video for interim training. No ground disturbance shall occur prior to CPM approval of the WEAP, unless specifically approved by the CPM.

If the owner requests an alternate paleontological trainer, the resume and qualifications of the trainer shall be submitted to the CPM for review and approval prior to installation

of an alternate trainer. Alternate trainers shall not conduct training prior to CPM authorization.

In the monthly compliance report (MCR), the project owner shall provide copies of the WEAP certification of completion forms with the names of those trained and the trainer or type of training (in-person or video) offered that month. The MCR shall also include a running total of all persons who have completed the training to date.

PAL-5 The project owner shall ensure that the PRS and PRM(s) monitor consistent with the PRMMP all construction-related grading, excavation, trenching, and augering in areas where potential fossil-bearing materials have been identified, both at the site and along any constructed linear facilities associated with the project. In the event that the PRS determines full-time monitoring is not necessary in locations that were identified as potentially fossil-bearing in the PRMMP, the project owner shall notify and seek the concurrence of the CPM.

The project owner shall ensure that the PRS and PRM(s) have the authority to halt or redirect construction if paleontological resources are encountered. The project owner shall ensure that there is no interference with monitoring activities unless directed by the PRS. Monitoring activities shall be conducted as follows:

1. Any change of monitoring from the accepted schedule in the PRMMP shall be proposed in a letter or email from the PRS and the project owner to the CPM prior to the change in monitoring and will be included in the monthly compliance report. The letter or email shall include the justification for the change in monitoring and be submitted to the CPM for review and approval.

2. The project owner shall ensure that the PRM(s) keep a daily monitoring log of paleontological resource activities. The PRS may informally discuss paleontological resource monitoring and mitigation activities with the CPM at any time.

3. The project owner shall ensure that the PRS notifies the CPM within 24 hours of the occurrence of any incidents of non-compliance with any paleontological resources Conditions of Certification. The PRS shall recommend corrective action to resolve the issues or achieve compliance with the Conditions of Certification.

4. For any significant paleontological resources encountered, either the project owner or the PRS shall notify the CPM within 24 hours, or Monday morning in the case of a weekend event where construction has been halted because of a paleontological find.

The project owner shall ensure that the PRS prepares a summary of monitoring and other paleontological activities placed in the monthly compliance reports. The summary will include the name(s) of PRS or PRM(s) active during the month, general descriptions of training and monitored construction activities, and general locations of excavations, grading, and

other activities. A section of the report shall include the geologic units or subunits encountered, descriptions of samplings within each unit, and a list of identified fossils. A final section of the report will address any issues or concerns about the project relating to paleontological monitoring, including any incidents of non-compliance or any changes to the monitoring plan that have been approved by the CPM. If no monitoring took place during the month, the report shall include an explanation in the summary as to why monitoring was not conducted.

The PRS shall evaluate whether the information being submitted in a compliance report should be considered confidential. If so, the PRS shall submit the information under confidential cover to the CPM.

Verification: The project owner shall ensure that the PRS submits the summary of monitoring and paleontological activities in the MCR. When feasible, the CPM shall be notified 10 days in advance of any proposed changes in monitoring different from the plan identified in the PRMMP. If there is any unforeseen change in monitoring, the notice shall be given as soon as possible prior to implementation of the change. If required by the PRS, the compliance reports shall be submitted under confidential cover to the CPM

PAL-6 The project owner, through the designated PRS, shall ensure that all components of the PRMMP are adequately performed including collection of fossil materials, preparation of fossil materials for analysis, analysis of fossils, identification and inventory of fossils, the preparation of fossils for curation, and the delivery for curation of all significant paleontological resource materials encountered and collected during project construction.

Verification: The project owner shall maintain in his/her compliance file copies of signed contracts or agreements with the designated PRS and other qualified research specialists. The project owner shall maintain these files for a period of three years after project completion and approval of the CPM-approved paleontological resource report (see **PAL-7**). The project owner shall be responsible for paying any curation fees charged by the museum for fossils collected and curated as a result of paleontological mitigation. A copy of the letter of transmittal submitting the fossils to the curating institution shall be provided to the CPM.

PAL-7 The project owner shall ensure preparation of a Paleontological Resources Report (PRR) by the designated PRS. The PRR shall be prepared following completion of the ground-disturbing activities. The PRR shall include an analysis of the collected fossil materials and related information, and submit it to the CPM for review and approval.

The report shall include, but is not limited to, a description and inventory of recovered fossil materials; a map showing the location of paleontological resources encountered; determinations of sensitivity and significance; and a statement by the PRS that project impacts to paleontological resources have been mitigated below the level of significance. The PRS shall evaluate whether the information being submitted in the PRR should be considered confidential. If so, the PRS shall submit the information under confidential cover to the CPM.

Verification: Within 90 days after completion of ground-disturbing activities, including landscaping, the project owner shall submit the PRR. If required by the PRS, the PRR shall be provided under confidential cover to the CPM.

Certification of Completion
Worker Environmental Awareness Program
PIO PICO Energy Center Project (11-AFC-01)

This is to certify these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on cultural, paleontological, and biological resources for all personnel (that is, construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

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Cultural Trainer: _____ Signature:_____ Date: ___/___/____

PaleoTrainer: _____ Signature:_____ Date: ___/___/____

Biological Trainer: _____Signature:_____ Date:___/___/__

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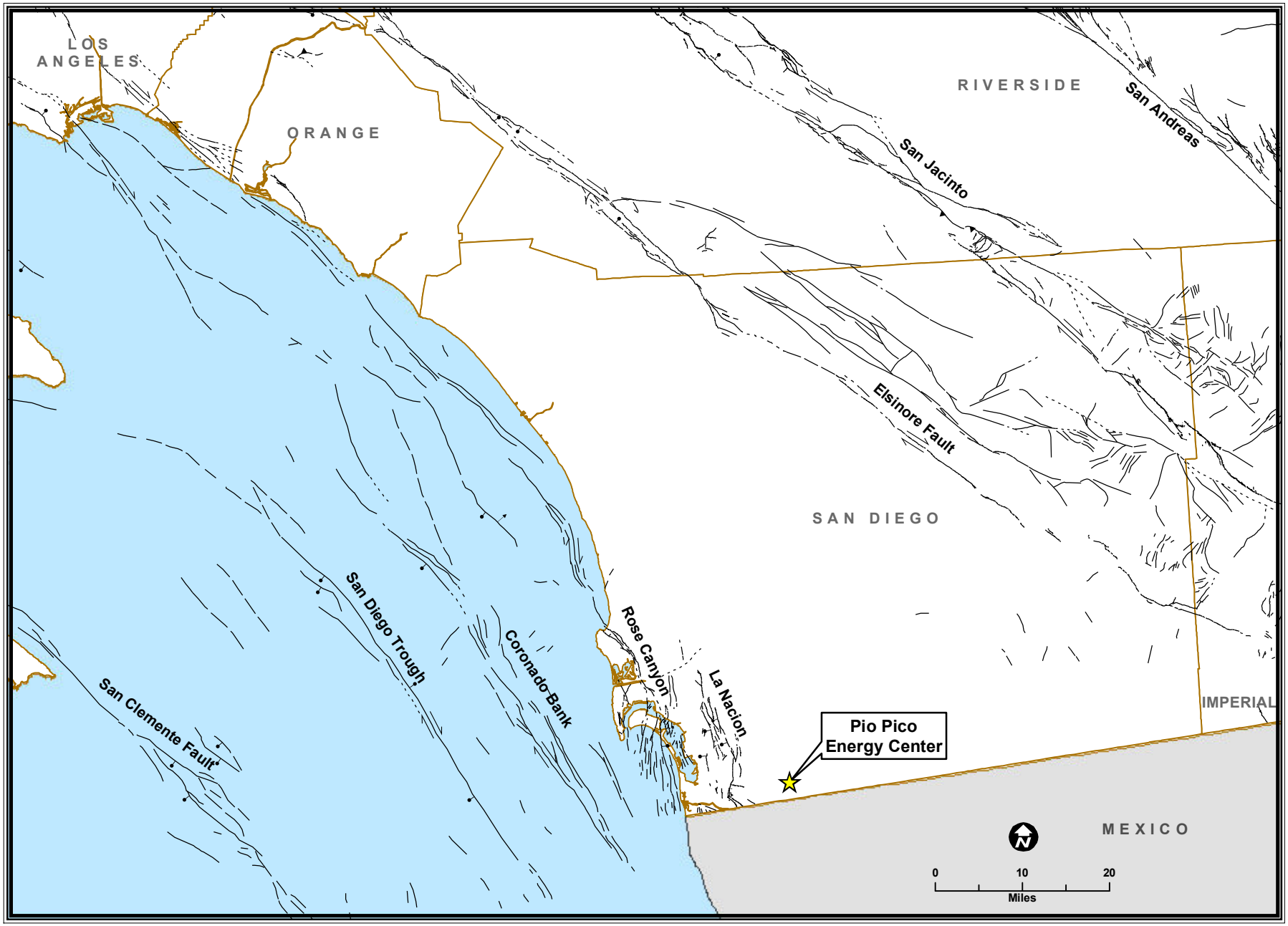
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GEOLOGICAL RESOURCES - FIGURE 1

Pio Pico Energy Center - Fault Map



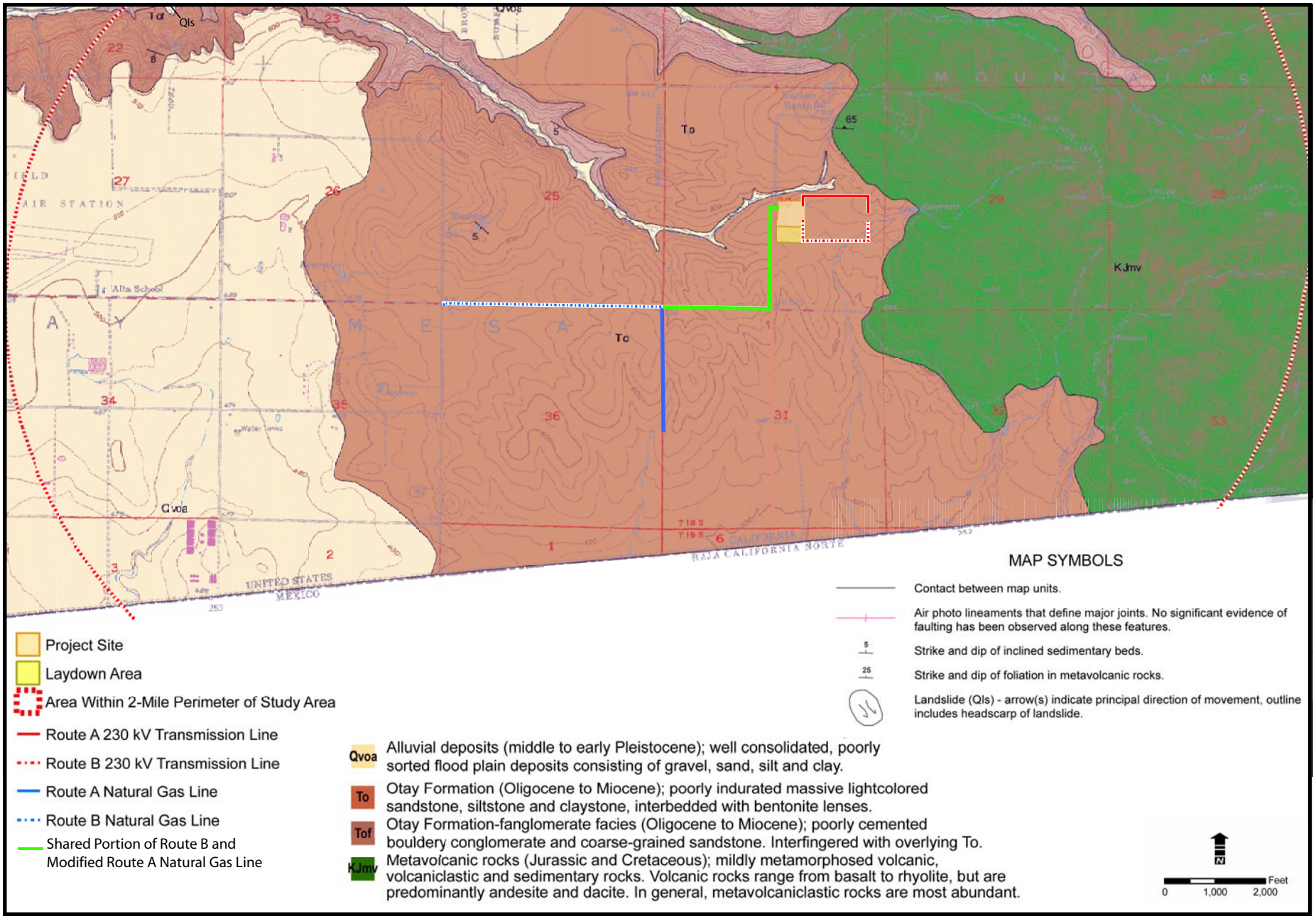
GEOLOGICAL RESOURCES

CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Dept of Conservation - California Geological Survey - 2010 Fault Activity Map of California

GEOLOGICAL RESOURCES - FIGURE 2

Pio Pico Energy Center - Geology Map



GEOLOGICAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 5.3-1B

GEOLOGICAL RESOURCES - FIGURE 3

Pio Pico Energy Center - Geomorphic Provinces



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE:California Department of Conservation, California Geological Survey

POWER PLANT EFFICIENCY

Shahab Khoshmashrab

SUMMARY OF CONCLUSIONS

The project, if constructed and operated as proposed, would generate a nominal 300 MW (net output) of intermediate and peaking electric power at an overall project fuel efficiency of 43 % lower heating value (LHV) at maximum full load and average annual ambient conditions[1]. While it would consume substantial amounts of energy, it would do so in the most efficient manner practicable. It would not create significant adverse effects on energy supplies or resources, would not require additional sources of energy supply, and would not consume energy in a wasteful or inefficient manner. No energy standards apply to the project. Staff therefore concludes that the project would present no significant adverse impacts upon energy resources.

INTRODUCTION

The Energy Commission makes findings as to whether energy use by Pio Pico Energy Center (PPEC) would result in significant adverse impacts on the environment, as defined in the California Environmental Quality Act (CEQA). If the Energy Commission finds that the PPEC's consumption of energy would create a significant adverse impact, it must determine whether there are any feasible mitigation measures that could eliminate or minimize the impacts. In this analysis, staff addresses the issue of inefficient and unnecessary consumption of energy.

In order to support the Energy Commission's findings, this analysis will:

- examine whether the facility would likely present any adverse impacts upon energy resources;
- examine whether these adverse impacts are significant; and if so,
- examine whether feasible mitigation measures exist that would eliminate the adverse impacts, or reduce them to a level of insignificance.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS

No Federal, State or local/county laws, ordinances, regulations and standards (LORS) apply to the efficiency of this project.

SETTING

Pio Pico Energy Center, LLC, the applicant, proposes to construct and operate the 300 MW (nominal net output) simple cycle, quick start[2] PPEC providing flexible peaking and intermediate power to the San Diego area (PPEC 2011a, AFC § 1.1). The project

[1] At typical site temperature of 70 °F with 57 % humidity (PPEC 2011a, AFC Figure 3.5-2A).

[2] The LMS100 machines to be employed in this project can achieve full load from a cold start in ten minutes (PPEC 2011a, AFC § 1.1; GE 2008).

would consist of three General Electric (GE) LMS100 gas turbine generators and ancillary equipment. The applicant intends for the project to operate at an annual capacity factor of no more than 46 % (PPEC 2011a, AFC § 3.5.1). The gas turbines would be equipped with evaporative inlet air cooling and compressor intercooling (via a water-cooled heat exchanger) to enhance power, as well as combustor water injection and selective catalytic reduction (SCR) to control oxides of nitrogen emissions and a combustion catalyst to control carbon monoxide (PPEC 2011a, AFC §§ 1.1, 3.5.4.1).

Natural gas would be delivered to the project site via either a new (up to 12-inch diameter) approximately 8000-foot long natural gas pipeline, or a new (up to 12-inch diameter) approximately 10,300-foot long natural gas pipeline, that would be connected to an existing 36-inch San Diego Gas and Electric Company (SDG&E) natural gas transmission pipeline (PPEC 2011a, AFC §§ 3.5.6, 3.8).

ASSESSMENT OF IMPACTS

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE OF ENERGY RESOURCES

CEQA Guidelines state that the environmental analysis "…shall describe feasible measures which could minimize significant adverse impacts, including where relevant, inefficient and unnecessary consumption of energy" (Cal. Code Regs., tit. 14, § 15126.4(a)(1)). Appendix F of the Guidelines further suggests consideration of such factors as the project's energy requirements and energy use efficiency; its effects on local and regional energy supplies and energy resources; its requirements for additional energy supply capacity; its compliance with existing energy standards; and any alternatives that could reduce wasteful, inefficient and unnecessary consumption of energy (Cal. Code Regs., tit. 14, § 15000 et seq., Appendix F).

The inefficient and unnecessary consumption of energy, in the form of non-renewable fuels such as natural gas and oil, constitutes an adverse environmental impact. An adverse impact can be considered significant if it results in:

- adverse effects on local and regional energy supplies and energy resources;
- a requirement for additional energy supply capacity;
- noncompliance with existing energy standards; or
- the wasteful, inefficient and unnecessary consumption of fuel or energy.

PROJECT ENERGY REQUIREMENTS AND ENERGY USE EFFICIENCY

Any power plant large enough to fall under Energy Commission siting jurisdiction will consume large amounts of energy. Under average ambient conditions, PPEC would burn natural gas at a nominal rate of 2,457 million Btu[3] per hour LHV (PPEC 2011a, AFC § 3.5.6). This is a substantial rate of energy consumption, and holds the potential to impact energy supplies. Under typical ambient conditions, electricity would be generated at a full load efficiency of approximately 43 % LHV (PPEC 2011a, AFC §

[3] British thermal units.

3.5.4.2). This efficiency level compares favorably with the average fuel efficiency of a typical simple cycle power plant.

ADVERSE EFFECTS ON ENERGY SUPPLIES AND RESOURCES

The applicant has described its sources of supply of natural gas for the project (PPEC 2011a, AFC §§ 3.5.6, 3.8). Natural gas for the PPEC project would be supplied from an existing SDG&E natural gas transmission pipeline. The SDG&E natural gas system has access to gas from the Rocky Mountains, Canada and the southwest. This represents a resource of considerable capacity. It is therefore highly unlikely that the project could pose a significant adverse impact on natural gas supplies in California.

ADDITIONAL ENERGY SUPPLY REQUIREMENTS

Natural gas would be delivered to the project site via a new natural gas pipeline that would be connected to an existing SDG&E natural gas transmission pipeline (PPEC 2011a, AFC §§ 3.5.6, 3.8). This is a resource with adequate delivery capacity for a project of this size. There is no real likelihood that the PPEC project would require the development of additional energy supply capacity.

COMPLIANCE WITH ENERGY STANDARDS

No standards apply to the efficiency of the PPEC project or other non-cogeneration projects.

ALTERNATIVES TO REDUCE WASTEFUL, INEFFICIENT AND UNNECESSARY ENERGY CONSUMPTION

PPEC could be deemed to create significant adverse impacts on energy resources if alternatives existed that would reduce the project's use of fuel. Evaluation of alternatives to the project that could reduce wasteful, inefficient or unnecessary energy consumption first requires examination of the project's energy consumption. Project fuel efficiency, and therefore its rate of energy consumption, is determined by the configuration of the power producing system and by the selection of equipment used to generate power.

Project Configuration

The project objective is to provide flexible peaking and load following power generation services during periods of high demand (especially during the morning and evening ramps) (PPEC 2011a, AFC § 2.1). A simple cycle configuration is consistent with this objective. The PPEC project would be configured as three simple cycle power plants in parallel, in which electricity is generated by three natural gas-fired turbine generators (PPEC 2011a, AFC §§ 1.1, 3.5.1). This configuration, with its short start-up time and fast ramping[4] capability, is well suited to providing peaking power. Further, when reduced output is required, one or more turbine generators can be shut down, allowing the remaining machine(s) to produce a %age of the full power at optimum efficiency, rather than operating a single, larger machine at a less efficient partial load output.

[4] Ramping is increasing and decreasing electrical output to meet fluctuating load requirements.

Equipment Selection

Modern gas turbines embody the most fuel-efficient electric generating technology available today. The PPEC project would employ three GE LMS100 gas turbine generators, the newest and most efficient such machine available (PPEC 2011a, AFC §§ 1.1, 3.5.1; Figure 3.1-3A). This model of the LMS100[5] is nominally rated at 103.5 MW at a fuel efficiency of 43.6 % (GTW 2011). The PPEC project would actually produce 300 MW (100 MW per machine) (net output) at a site rated fuel efficiency of 43 % LHV, based on typical ambient conditions (PPEC 2011a, AFC Figure 3.5-2A). This site rating differs from nominal figures due to site specific ambient conditions (altitude and temperature), power losses from parasitic loads, and reduced system output due to flow losses caused by the inlet air cooling system and the SCR unit installed on the exhaust of each turbine.

Efficiency of Alternatives to the Project

Alternative Generating Technologies

Alternative generating technologies for the PPEC project are considered in the AFC (PPEC 2011a, AFC § 4.1, 4.3). Other fossil fuels, nuclear, geothermal, biomass, wind, and solar power are not suitable to meet project objectives. Solar is not dispatchable, so is incapable of producing the ancillary services[6] needed. Wind energy is not always available at the project area. Coal and oil are too highly polluting to be viable in California. Geothermal is not available at the PPEC project site, and biomass may present problems with availability. Staff agrees with the applicant that only natural gas-burning technologies are feasible for this project.

Natural Gas-Burning Technologies

Fuel consumption is one of the most important economic factors in selecting an electric generator; fuel typically accounts for over two-thirds of the total operating costs of a fossil-fired power plant (Power 1994). Under a competitive power market system, where operating costs are critical in determining the competitiveness and profitability of a power plant, the plant owner is thus strongly motivated to purchase fuel-efficient machinery.

Capital cost is also important in selecting generating machinery. Current progress in the development of gas turbines, incorporating technological advances made in the development of aircraft (jet) engines, combined with the cost advantages of assembly-line manufacturing, has made available machines that not only offer the lowest available fuel costs, but at the same time sell for the lowest per-kilowatt capital cost.

The GE LMS100

The applicant would employ three General Electric LMS100 gas turbine generators in the PPEC project (PPEC 2011a, AFC §§ 1.1, 3.5.1; Figure 3.1-3A). The LMS100 gas

[5] PPEC would employ LMS100PA machines with single annular combustors equipped with water injection for NOx control.

[6] PPEC proposes to offer peaking power service, including flexible output, rapid start, and automatic generation control.

turbine represents the most modern and efficient such machine now available. This machine is nominally rated at 103.5 MW and 43.6 % efficiency LHV at ISO[7] conditions (GTW 2011). (Staff compares alternative machines' ISO ratings as a common baseline, since project-specific ratings are not available for the alternative machines.)

In the LMS100, GE has taken a novel approach by combining technology from both aircraft engines and heavy industrial machines. Like most aeroderivatives, the LMS100 is basically a two-shaft engine, in which an initial low-pressure compressor section is driven by the final low-pressure turbine section. An independent high-pressure compressor section, spinning on a concentric shaft, is driven by the high-pressure turbine section. GE has done three things differently on the LMS100.

First, while the high-pressure compressor and turbine spool is taken from an aero engine (the GE CF6-80C2 that powers the Boeing 747 and the CF6-80E1 that powers the Boeing 767), the low pressure spool is taken from GE's industrial Frame 6 machine. Where the airflow (and, thus, power output) of GE's popular LM6000 aeroderivative engine (see below) was limited by airflow through the low pressure spool, this limit is removed by substituting these parts from the Frame 6.

Second, GE has employed a much more effective compressor interstage cooling system. On the LM6000 SPRINT[8] machine, after air has been partially compressed in the low pressure compressor, it is evaporatively cooled by spraying water into the interstage space. Since the air entering the high pressure compressor is now cooler than it would be without intercooling, less power is required to drive the high pressure compressor. This leaves more power to drive the electric generator, increasing both power output and fuel efficiency. On the LMS100, GE ducts the air discharged from the low pressure compressor away from the machine, where it can be more effectively cooled by a separate cooling system (once-through, evaporative or dry cooling systems can be employed). The cooled air is then ducted back into the high pressure compressor.

Third, GE has provided a third shaft, independent of the first two spools, to carry the power turbine, which is in turn coupled to the electric generator[9]. On most aeroderivative gas turbine generators, the generator is coupled directly to the low pressure turbine shaft. Since the generator must turn at synchronous speed (3,600 rpm in North America) the low pressure spool must also turn at this speed. This restricts design of the machine, preventing the turbine from operating at optimum levels. Since the LMS100's power turbine and generator are not mechanically coupled to the low pressure spool, this spool is free to spin at optimum speed (approximately 5,300 rpm at full load) (Morton 2005).

The net result of these design improvements is a doubling of power output and considerable improvement in fuel efficiency as compared to the LM6000 machine, and much greater operating flexibility as compared to the heavy industrial machines. Where

[7] International Standards Organization (ISO) standard conditions are 15°C (59°F), 60 % relative humidity, and one atmosphere of pressure (equivalent to sea level).

[8] SPRINT stands for "SPRay INTercooling."

[9] This configuration is commonly found in helicopter engines.

other gas turbine generators' fuel efficiency drops off rapidly when the machine is operated at less than full load, the LMS100's efficiency suffers much less at lower output. Further, the machine is capable of ramping at high rates. The LMS100 can be operated at loads as low as ten % (10 MW), then ramped up quickly. When running at half load (50 MW), the machine can reach full load of nearly 100 MW in less than a minute. In addition, the LMS100 can go from a cold start to full load in ten minutes. Such operating flexibility make this the most capable machine available for providing such ancillary services as peaking, load following, spinning and non-spinning reserve, and automatic generation control.

Alternatives to the LMS100

Alternative machines that can meet the project's objectives are the LM6000 SPRINT, FT8 TwinPac, and the SGT-800, which are aeroderivative machines adapted from General Electric, Pratt & Whitney, and Siemens Power Generation aircraft engines, respectively.

The General Electric LM6000PC SPRINT gas turbine generator in a simple cycle configuration is nominally rated at 50.5 MW and 40.3 % efficiency LHV at ISO conditions (GTW 2011).

The Pratt & Whitney FT8 TwinPac gas turbine generator in a simple cycle configuration is nominally rated at 51.4 MW and 38.4 % efficiency LHV at ISO conditions (GTW 2011).

The Siemens SGT-800 gas turbine generator in a simple cycle configuration is nominally rated at 47 MW and 37.5 % efficiency LHV at ISO conditions (GTW 2011).

Machine	Generating Capacity (MW)	ISO Efficiency (LHV)
GE LMS100	**103.5**	**43.6 %**
GE LM6000PC SPRINT	50.5	40.3 %
P & W FT8 TwinPac	51.4	38.4 %
Siemens SGT-800	47	37.5 %

Source: GTW 2011

While the LMS100 enjoys a significant advantage in fuel efficiency over these alternative machines (especially the FT8 TwinPac and SGT-800), its operating flexibility makes it even more attractive for peaking, load following and ancillary service than these efficiency numbers reflect. Staff agrees with the applicant that the GE LMS100 is the most appropriate choice of machine for the PPEC project.

Inlet Air Cooling

A further choice of alternatives involves the selection of gas turbine inlet air-cooling methods.[10] The two commonly used techniques are the evaporative cooler or fogger, and the chiller (mechanical or absorption); both techniques increase power output by cooling the gas turbine inlet air. In general terms, a mechanical chiller can offer greater power output than the evaporative cooler on hot, humid days, but consumes electric

[10] A gas turbine's power output decreases as ambient air temperatures rise. Cooling the air as it enters the machine increases its power output.

power to operate its refrigeration process, thus slightly reducing overall net power output and, thus, overall efficiency. An absorption chiller uses less electric power, but necessitates the use of a substantial inventory of ammonia. An evaporative cooler or a fogger boosts power output best on dry days; it uses less electric power than a mechanical chiller, possibly yielding slightly higher operating efficiency. The difference in efficiency among these techniques is relatively insignificant.

The applicant proposes to employ evaporative inlet air cooling and evaporative compressor interstage cooling (PPEC 2011a, AFC §§ 1.1, 3.5.4.1). Given the climate at the PPEC project site and the relative lack of superiority of one system over the other, staff agrees that the applicant's approach would yield no significant adverse energy impacts.

In conclusion, the project configuration (simple cycle) and generating equipment chosen appear to represent the most efficient feasible combination to satisfy the project objectives. There are no alternatives that could significantly reduce energy consumption.

CUMULATIVE IMPACTS

No nearby projects have been identified that could potentially combine with the PPEC project to create cumulative impacts on natural gas resources. Note that the SDG&E natural gas supply system draws from extensive supplies originating in the Rocky Mountains, in the southwest, and in Canada. Staff believes the SDG&E system is adequate to supply the PPEC project without adversely impacting its other customers.

NOTEWORTHY PUBLIC BENEFITS

The applicant proposes to provide flexible peaking power and ancillary services, such as load following, during periods of high demand (PPEC 2011a, AFC § 2.1). By doing so in this most fuel-efficient manner, i.e., employing the most modern peaking gas turbine generators available, the PPEC project would provide a benefit to the electric consumers of California.

CONCLUSIONS

The project, if constructed and operated as proposed, would generate 300 MW (nominal net output) of peaking electric power at an overall project fuel efficiency of 43 % LHV at typical ambient conditions. While it would consume substantial amounts of energy, it would do so in the most efficient manner practicable. It would not create significant adverse effects on energy supplies or resources, would not require additional sources of energy supply, and would not consume energy in a wasteful or inefficient manner. No energy standards apply to the project. Staff therefore concludes that the project would present no significant adverse impacts upon energy resources. No cumulative impacts on energy resources are likely.

PROPOSED CONDITIONS OF CERTIFICATION

No conditions of certification are proposed.

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POWER PLANT RELIABILITY

Shahab Khoshmashrab

SUMMARY OF CONCLUSIONS

Pio Pico Energy Center, LLC, the applicant, predicts an equivalent availability factor of at least 98 %. Staff believes this is achievable. Based on a review of the Application for Certification (AFC), staff concludes that Pio Pico Energy Center (PPEC) would be built and operated in a manner consistent with industry norms for reliable operation. This should provide an adequate level of reliability. No conditions of certification are proposed.

INTRODUCTION

In this analysis, California Energy Commission (Energy Commission) staff addresses the reliability issues of the project to determine if the power plant is likely to be built in accordance with typical industry norms for reliability of power generation. Staff uses this level of reliability as a benchmark because it ensures that the resulting project would likely not degrade the overall reliability of the electric system it serves (see “Setting” below).

The scope of this power plant reliability analysis covers:

- equipment availability;
- plant maintainability;
- fuel and water availability; and
- power plant reliability in relation to natural hazards.

Staff examined the project design criteria to determine if the project is likely to be built in accordance with typical industry norms for reliability of power generation. While the applicant has predicted an equivalent availability factor of at least 98 % for PPEC (see below), staff uses typical industry norms as a benchmark, rather than the applicant’s projection, to evaluate the project’s reliability.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

No federal, state, or local/county laws, ordinances, regulations, and standards (LORS) apply to the reliability of this project.

SETTING

In the restructured competitive electric power industry, the responsibility for maintaining system reliability falls largely to the state’s control area operators, such as the California Independent System Operator (California ISO), that purchase, dispatch, and sell electric power throughout the state. How the California ISO and other control area operators will ensure system reliability is an ongoing process; protocols are still being developed and

put in place that will allow sufficient reliability to be maintained under the competitive market system. “Must-run” power purchase agreements and “participating generator” agreements are two mechanisms being employed to ensure an adequate supply of reliable power.

In September 2005, California AB 380 (Núñez, Chapter 367, Statutes of 2005) became law. This modification to the Public Utilities Code requires the California Public Utilities Commission to consult with the California ISO to establish resource adequacy requirements for all load-serving entities (basically, public and privately owned utility companies). These requirements include maintaining a minimum reserve margin (extra generating capacity to serve in times of equipment failure or unexpected demand) and maintaining sufficient local generating resources to satisfy the load-serving entity’s peak demand and operating reserve requirements.

In order to fulfill this mandate, the California ISO has begun to establish specific criteria for each load-serving entity under its jurisdiction. These criteria guide each load-serving entity in deciding how much generating capacity and ancillary services to build or purchase, after which the load-serving entity issues power purchase agreements to satisfy these needs.

The California ISO’s mechanisms to ensure adequate power plant reliability apparently have been devised under the assumption that the individual power plants that compete to sell power into the system will each exhibit a level of reliability similar to that of power plants of past decades. However, there is cause to believe that, under free market competition, financial pressures on power plant owners to minimize capital outlays and maintenance expenditures may act to reduce the reliability of many power plants, both existing and newly constructed (McGraw-Hill, 1994). It is possible that, if significant numbers of power plants were to exhibit individual reliability sufficiently lower than this historical level, the assumptions used by California ISO to ensure system reliability would prove invalid, with potentially disappointing results. Until the restructured competitive electric power system has undergone an adequate shakeout period, and the effects of varying power plant reliability are thoroughly understood and compensated for, staff will recommend that power plant owners continue to build and operate their projects to the level of reliability to which all in the industry are accustomed.

The applicant proposes to operate the 300-megawatt (MW) (nominal net output) simple cycle PPEC project, while providing flexible peaking and load following power generation services during periods of high demand in the San Diego area (PPEC 2011a, AFC § 2.1). The project is expected to achieve an availability factor of at least 98 % (PPEC 2011a, AFC § 3.12.3). The applicant expects to operate the plant at a capacity factor of 46 % during each year of its operating life (PPEC 2011a, AFC § 3.12.3).

ASSESSMENT OF IMPACTS

METHOD FOR DETERMINING RELIABILITY

The Energy Commission must make findings as to the manner in which the project is to be designed, sited, and operated to ensure safe and reliable operation (Title 20, CCR §1752[c]). Staff takes the approach that a project is acceptable if it does not degrade the reliability of the utility system to which it is connected. This is likely the case if the project exhibits reliability at least equal to that of other power plants on that system.

The availability factor for a power plant is the percentage of the time that it is available to generate power; both planned and unplanned outages subtract from its availability. Measures of power plant reliability are based on the plant's actual ability to generate power when it is considered available and are based on starting failures and unplanned, or forced, outages. For practical purposes, reliability can be considered a combination of these two industry measures, making a reliable power plant one that is available when called upon to operate. Power plant systems must be able to operate for extended periods without shutting down for maintenance or repairs. Achieving this reliability is accomplished by ensuring adequate levels of equipment availability, plant maintainability with scheduled maintenance outages, fuel and water availability, and resistance to natural hazards. Staff examines these factors for the project and compares them to industry norms. If they compare favorably, staff can conclude that PPEC would be as reliable as other power plants on the electric system and will therefore not degrade system reliability (see below for analysis).

EQUIPMENT AVAILABILITY

Equipment availability would be ensured by use of appropriate quality assurance/quality control (QA/QC) programs during design, procurement, construction and operation of the plant and by providing for adequate maintenance and repair of the equipment and systems (discussed below).

Quality Control Program

The applicant describes a QA/QC program (PPEC 2011a, AFC §§ 3.10.2.2, 3.12.6) typical of the power industry. Equipment would be purchased from qualified suppliers based on technical and commercial evaluations. The project owner would perform receipt inspections, test components, and administer independent testing contracts. Staff expects implementation of this program to yield typical reliability of design and construction. To ensure such implementation, staff has proposed appropriate conditions of certification under the portion of this document entitled **Facility Design**.

PLANT MAINTAINABILITY

Equipment Redundancy

A generating facility called on to operate in base-load service for long periods of time must be capable of being maintained while operating. A typical approach for achieving this is to provide redundant examples of those pieces of equipment most likely to require service or repair.

The applicant plans to provide appropriate redundancy of function for the project (PPEC 2011a, AFC § 3.12.4). Because the project would consist of three combustion turbine generators, operating in parallel as independent equipment trains, it is inherently reliable. A single equipment failure cannot disable more than one train, which allows the plant to continue to generate, but at reduced output (approximately 66 % of full plant output). Furthermore, all plant ancillary systems are designed with adequate redundancy to ensure continued operation in the face of equipment failure. Balance of plant equipment will be provided with redundancy; examples include:

two 100 % capacity cooling water pumps;

three 50 % capacity natural gas compressors;

two 60 % capacity demineralized/reverse osmosis system; and

two 100 % capacity auxiliary transformers.

Staff believes that equipment redundancy would be sufficient for a project such as this.

Maintenance Program

The applicant proposes to establish a preventive plant maintenance program typical of the industry (PPEC 2011a, AFC §§ 3.10, 3.12.1, 3.12.3). Equipment manufacturers provide maintenance recommendations with their products; the applicant would base its maintenance program on these recommendations. The program will encompass preventive and predictive maintenance techniques. Maintenance outages would be planned for periods of low electricity demand. In light of these plans, staff expects that the project would be adequately maintained to ensure acceptable reliability.

FUEL AND WATER AVAILABILITY

For any power plant, the long-term availability of fuel and of water for cooling or process use is necessary to ensure reliability. The need for reliable sources of fuel and water is obvious; lacking long-term availability of either source, the service life of the plant may be curtailed, threatening the supply of power as well as the economic viability of the plant.

Fuel Availability

PPEC would burn natural gas supplied by San Diego Gas and Electric Company (SDG&E). There are two possible routes for the gas supply pipeline. Both routes would connect to an existing SDG&E natural gas pipeline, but at different locations. **Route A** extends approximately 2,375 feet south along Alta Road, which is the same distance of the original Route A along Alta Road. The Modified Gas Line Route A then turns west on Otay Mesa Road for approximately 2,700 feet, and then turns south on Enrico Fermi Drive for approximately 2,700 feet to Airway Road, at which point it would connect to an existing SDG&E natural gas pipeline, see **Project Description - Figure 3, Alternative Routes for Natural Gas Line**.

Route B would extend approximately 2,375 feet south along Alta Road, turn west on Otay Mesa Road, and continue approximately 7,920 feet to Harvest Road at which point

it would connect to the existing SDG&E natural gas pipeline for a total of approximately 10,300 feet. The pipeline will be constructed, owned, and operated by SDG&E. SDG&E's natural gas supply system represents a resource of considerable capacity and offers access to adequate supplies of gas from the Rocky Mountains, Canada, and the Southwest. Staff agrees with the applicant's prediction that there would be adequate natural gas supply and pipeline capacity to meet the project's needs.

Water Supply Reliability

The project would use water for plant service needs, cooling system makeup, combustion turbine injection, combustion turbine evaporative cooling makeup, and secondary fire protection. This water will be supplied by Otay Water District (OWD) (PPEC 2011a, AFC §§ 3.5.7, 3.12.5.2, 5.5). The applicant has provided a copy of the water Will-Serve Letter issued by OWD (PPEC 2001a, AFC Appendix I). Staff believes these sources yield sufficient likelihood of a reliable supply of water. (For further discussion of water supply, see the **Soil and Water Resources** section of this document.)

POWER PLANT RELIABILITY IN RELATION TO NATURAL HAZARDS

Natural forces can threaten the reliable operation of a power plant. High winds, tsunamis (tidal waves), seiches (waves in inland bodies of water), and flooding would not likely represent a hazard for this project, but seismic shaking (earthquake) may present a credible threat to reliable operation.

Seismic Shaking

The site lies within the seismically active Southern California. However, no active or potentially active faults have been identified near the project site (PPEC 2011a, AFC §§ 3.4.2.2, 5.3); see the "Faulting and Seismicity" portion of the **Geology and Paleontology** section of this document. The project will be designed and constructed to the latest applicable LORS (PPEC 2011a, AFC Appendices A through F). Compliance with current seismic design LORS represents an upgrading of performance during seismic shaking compared to older facilities since these LORS have been continually upgraded. Because it would be built to the latest seismic design LORS, this project would likely perform at least as well as, and perhaps better than, existing plants in the electric power system. Staff has proposed conditions of certification to ensure this; see the section of this document entitled **Facility Design**. In light of the general historical performance of California power plants and the electrical system in seismic events, staff has no special concerns with the power plant's functional reliability during earthquakes.

Flooding

The site is at an elevation of approximately 635 feet above mean sea level and is not within a 100-year flood zone (PPEC 2011a, AFC §§ 3.4.1, 3.6.9). With proper plant design (ensured by adherence to the proposed **Facility Design** conditions of certification), staff believes there are no concerns with power plant functional reliability due to flooding. For further discussion, see **Soil and Water Resources** and **Geology and Paleontology**.

COMPARISON WITH EXISTING FACILITIES

Industry statistics for availability factors (as well as many other related reliability data) are kept by the North American Electric Reliability Corporation (NERC). NERC continually polls utility companies throughout the North American continent on project reliability data through its Generating Availability Data System (GADS) and periodically summarizes and publishes the statistics on the Internet [http://www.nerc.com]. NERC reports an availability factor of 91.5 % as the generating unit average figure for the years 2005 through 2009 for gas turbine units (50 MW and larger) (NERC 2010).

The model of gas turbine that would be employed in the PPEC project has been on the market for several years now and can be expected to exhibit typically high availability. General Electric (GE), manufacturer of the LMS100 gas turbines, pursued a development program for these units that is nearly unprecedented[1] in the gas turbine industry. New turbines typically undergo only systems tests during development, leaving final testing and shakedown to the initial commercial units. After the costly debacle that attended the release of GE's Frame 7F machine in the mid-1990s, GE committed to build and own the initial LMS100 power plant itself. Only after the machine had been thoroughly tested and proven did GE sell this initial plant to its ultimate owner, and proceed to deliver LMS100 machines to additional customers. That first machine, destined for the Basin Electric Power Cooperative's Groton, SD station, was delivered in late 2005 and was turned over to its new owner in summer 2006 (GTW 2006; Morton 2004).

The applicant's prediction of an annual availability factor of at least 98 % (PPEC 2011a, AFC §§ 3.12.3) appears reasonable compared to the NERC figure for similar plants throughout North America (see above), and in light of the GE's development program. In fact, these machines can well be expected to outperform the fleet of various (mostly older) gas turbines that make up the NERC statistics. Further, since the plant would be operating in parallel with the three units at the PPEC facility, maintenance can be scheduled during those times of year when plant output is not required to meet market demand, typical of industry standard maintenance procedures. The applicant's estimate of plant availability, therefore, appears realistic. The stated procedures for assuring design, procurement, and construction of a reliable power plant appear to be in keeping with industry norms, and staff believes they are likely to yield an adequately reliable plant.

NOTEWORTHY PROJECT BENEFITS

This project would enhance power supply reliability in the California electricity market by meeting the state's growing energy demand, contributing to electricity reserves in the region, and providing operating flexibility (that is, the ability to start up, shut down, turn down, and provide load following, spinning and non-spinning reserve). The fact that the project consists of three combustion turbine generators, configured as independent equipment trains, provides inherent reliability. A single equipment failure cannot disable

[1] GE has taken this same approach on the initial Frame 7H machines installed at the Inland Empire Energy Center project.

more than one train, thereby allowing the plant to continue to generate, though at reduced output.

The gas turbine that would be employed in the project has been on the market for several years and can be expected to exhibit typically high availability. The applicant's prediction of an equivalent availability factor of at least 98 % appears achievable. Staff believes this should provide an adequate level of reliability.

CONCLUSION

The applicant predicts an equivalent availability factor of at least 98 %, which staff believes is achievable. Based on a review of the AFC, staff concludes that the plant would be built and operated in a manner consistent with industry norms for reliable operation. This should provide an adequate level of reliability. No conditions of certification are proposed.

PROPOSED CONDITIONS OF CERTIFICATION

No conditions of certification are proposed.

REFERENCES

GTW (Gas Turbine World) 2006 – *Gas Turbine World*, July-August 2006, p. 9.

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NERC (North American Electric Reliability Council). 2010. 2005–2009 Generating Availability Report.

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TRANSMISSION SYSTEM ENGINEERING

Laiping Ng and Mark Hesters

SUMMARY OF CONCLUSIONS

The proposed interconnection facilities including the Pio Pico Energy Center (PPEC) 230 kV switchyard, both route A, a single 230 kV overhead line and continue with a single 230 kV underground cable, and route B, a single 230 kV overhead generator tie-line, and the termination at the proposed San Diego Gas and Electric Company (SDG&E) Otay Mesa switchyard are adequate and in accordance with industry standards and good utility practices, and are acceptable to staff according to engineering Laws, Ordinances, Regulations and Standards (LORS).

- The interconnection of the PPEC will cause new transmission line overloads under normal and contingency conditions. Mitigation includes installation of Special Protection System (SPS), reconfiguration of existing transmission lines, and reconductoring overloaded transmission lines. The applicant is part of a cluster of projects whose interconnection triggers the need for transmission system upgrades.

    1. The following transmission system upgrades are reasonably foreseeable consequences of the interconnection of the PPEC and require environmental analysis:

        - The reconductor of the 1,200 foot-long Escondido - Palomar Energy #1 and #2 230 kV transmission lines.
        - The reconductor of the 10,500 foot-long Friars - Doublet Tap 138 kV line transmission line.
        - The conversion of two 600 foot-long 69 kV overhead lines to underground cables near the Escondido Substation.

    o The interconnection of the PPEC and other generators included in the Phase II Interconnection Study would not result any overstressed breakers in the SDG&E system. Other existing breakers are adequate to withstand the post project incremental fault currents described in the Short Circuit Study. The reconfiguration of the TL23041 and TL23042 at the Miguel Substation will cause overstressed breaker(s) in the Comision Federal de Electricidad (CFE) system. The California Independent System Operator (California ISO) will coordinate the necessary mitigation with the CFE.

INTRODUCTION

STAFF ANALYSIS

This Transmission System Engineering (TSE) analysis examines whether or not the facilities associated with the proposed interconnection conform to all applicable LORS required for safe and reliable electric power transmission. Additionally, under the CEQA, the Energy Commission must conduct an environmental review of the “whole of

the action," which may include facilities not licensed by the Energy Commission (Cal Code Regs, tit 14, §15378). Therefore, the Energy Commission must identify the system impacts and necessary new or modified transmission facilities downstream of the proposed interconnection that are required for interconnection and that represent the "whole of the action."

Energy Commission staff relies on the interconnecting authority, in this case the California ISO, for the analysis of impacts on the transmission grid from the proposed interconnection as well as the identification and approval of new or modified facilities downstream that may be required as mitigation measures. The proposed project would connect to the SDG&E transmission network and requires analysis by SDG&E and approval of the California ISO.

ROLE OF SAN DIEGO GAS AND ELECTRIC

SDG&E is responsible for ensuring electric system reliability on its transmission system with the addition of the proposed transmission modifications, and determines both the standards necessary to ensure reliability and whether the proposed transmission modifications conform to existing standards. The California ISO will provide analysis in its Phase I and Phase II Interconnection Studies, and its approval for the facilities and changes required in its system for addition of the proposed transmission modifications.

ROLE OF CALIFORNIA INDEPENDENT SYSTEM OPERATOR

The California ISO is responsible for dispatching generating units in California, ensuring electric system reliability for all participating transmission owners and for developing the standards and procedures necessary to maintain system reliability. The California ISO will review SDG&E's studies to ensure the adequacy of the proposed PPEC transmission interconnection. The California ISO will also determine the reliability impacts of the proposed transmission modifications on the SDG&E transmission system in accordance with all applicable reliability criteria. According to the California ISO Tariff, it will determine the need for transmission additions or upgrades downstream from the interconnection point to ensure reliability of the transmission grid. The California ISO will, therefore, perform the Phase I Interconnection Study and provide its analysis, conclusions, and recommendations. The Phase II Interconnection Study includes the California ISO conclusions and recommendations. If necessary, the California ISO will provide written and verbal testimony on its findings at the Energy Commission hearings.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

- California Public Utilities Commission General Order 95, *Rules for Overhead Electric Line Construction*, formulates uniform requirements for construction of overhead transmission lines. Compliance with this order ensures adequate service and safety to persons engaged in the construction, maintenance, and operation or use of overhead electric lines and to the public in general.
- California Public Utilities Commission General Order 128, *Rules for Construction of Underground Electric Supply and Communications Systems*, formulates uniform requirements and minimum standards to be used for underground supply systems to

ensure adequate service and safety to persons engaged in the construction, maintenance, and operation or use of underground electric lines and to the public in general.

- The National Electric Safety Code, 1999, provides electrical, mechanical, civil, and structural requirements for overhead electric line construction and operation.
- The Western Electricity Coordinating Council (WECC) Planning Standards are merged with the North American Electric Reliability Corporation (NERC) Planning Standards and provide the system performance standards used in assessing the reliability of the interconnected system. These standards require the continuity of service to loads as the first priority, and preservation of interconnected operation as a secondary priority. Certain aspects of the NERC/WECC standards are either more stringent or more specific than the NERC standards alone. These standards provide planning for electric systems so as to withstand the more probable forced and maintenance outage system contingencies at projected customer demand and anticipated electricity transfer levels, while continuing to operate reliably within equipment and electric system thermal, voltage, and stability limits. These standards include the reliability criteria for system adequacy and security, system modeling data requirements, system protection and control, and system restoration. Analysis of the WECC system is based to a large degree on section I. A. of the standards, entitled *NERC and WECC Planning Standards with Table I and WECC Disturbance-Performance Table,* and on section I. D., entitled *NERC and WECC Standards for Voltage Support and Reactive Power*. These standards require that the results of power flow and stability simulations verify defined performance levels. Performance levels are defined by specifying the allowable variations in thermal loading, voltage, and frequency, and loss of load that may occur on systems during various disturbances. Performance levels range from no significant adverse effects inside and outside a system area during a minor disturbance (loss of load or a single transmission element out of service) to a level that seeks to prevent system cascading and the subsequent blackout of islanded areas during a major disturbance (such as loss of multiple 500 kV lines along a common right of way, and/or multiple generators). While controlled loss of generation or load or system separation is permitted in certain circumstances, its uncontrolled loss is not permitted (WECC 2002).
- NERC Reliability Standards for the Bulk Electric Systems of North America provide national policies, standards, principles, and guidelines to assure the adequacy and security of the electric transmission system. The NERC Reliability Standards provide for system performance levels under normal and contingency conditions. While these reliability standards are similar to NERC/WECC standards, certain aspects of the NERC/WECC standards are either more stringent or more specific than the NERC standards with regard to power flow and stability simulations for transmission system contingency performance. The NERC Reliability Standards apply not only to interconnected system operation but also to individual service areas (NERC 2006).
- California ISO Planning Standards also provide standards and guidelines to assure adequacy, security, and reliability in the planning of the California ISO transmission grid facilities. The California ISO Standards incorporate the NERC/WECC and NERC standards. With regard to power flow and stability simulations, these

standards are similar to the NERC/WECC or NERC standards for transmission system contingency performance. However, the California ISO standards also provide some additional requirements that are not found in the NERC/WECC or NERC standards. The California ISO standards apply to all participating transmission owners interconnecting to the grid controlled by California ISO. They also apply when there are any impacts to the California ISO grid due to facilities interconnecting to adjacent grids not operated by California ISO (California ISO 2002a).

- The California ISO/FERC (Federal Energy Regulatory Commission) Electric Tariff provides guidelines for construction of all transmission additions/upgrades within the grid controlled by California ISO. The California ISO determines the need for the proposed project where it will promote economic efficiency or maintain system reliability. The California ISO also determines the cost responsibility of the proposed project and provides an operational review of all facilities that are to be connected to the California ISO grid (California ISO 2003a).

PROJECT DESCRIPTION AND INTERCONNECTION FACILITIES

The PPEC is a natural gas-fired simple-cycle power generating facility that would be located in Otay Mesa, San Diego County, California. The PPEC would consist of three combustion turbine-generators (CTG). The maximum output of the PPEC would approximately be 308 megawatts (MW). With the generator auxiliary load of 8 MW, net output of the PPEC would be 300 MW. The PPEC would be interconnected to the SDG&E Otay Mesa switchyard. The proposed commercial operation date of the PPEC is early 2014.

The combustion turbine generator is rated at 127 MVA with a power factor of 0.90. Combustion turbine generators unit 1 and unit 2 would each be connected through their own 6,000-ampere generator circuit breaker and disconnect switch, through a short 6,000-ampere isolated phase bus duct to the low sides of its dedicated 78/104/130 MVA generator step-up (13.8/230 kV) transformer. The auxiliary power would be provided by the CTG unit 1 and CTG unit 2 through their dedicated 1,200-ampere isolated phase bus ducts and their dedicated back-fed step-down (13.8/4.16 kV) transformers. The CTG unit 3 would be connected through a short 6,000-ampere isolated phase bus duct to the low side of its dedicated generator step-up transformer. The high sides of the CTG transformers would each be connected through their dedicated 1,200-ampere SF6 breakers and 1,200-ampere disconnect switches to the common generator tie bus. A single 230 kV generator tie-line would connect the PPEC through a 2,000-ampere disconnect switch to the SDG&E Otay Mesa 230 kV switchyard which is located approximately 1,800 feet east of the PPEC site.

Two generator tie-line routes have been proposed to interconnect the PPEC to the Otay Mesa switchyard. Generator tie-line route A consists of both 230 kV overhead conductor and 230 kV underground cable. Route A would be built along the north side of Calzada de la Fuente, extend east for approximately 1,700 feet then routed underground for approximately 400 feet into the Otay Mesa switchyard. The 1,700 feet-long overhead generator tie-line would be built with 1113 kcmil ACSR conductor and the

400 feet-long underground tie-line would be built with 2300 kcmil Al XLPE cable. The total Route A length is approximately 2,100 feet long.

Route B would be an 230 kV overhead transmission line built from the east side of the PPEC project site, run south for approximately 550 feet then east for approximately 1,400 feet, then run north for approximately 700 feet into the Otay Mesa switchyard. With a total length of 2,650 feet, the Route B 230 kV overhead generator tie-line would be built with 1113 kcmil ACSR conductor.

The overhead generator tie-line would be supported by typical 90-foot height single-pole structures. The underground section of the proposed Route A underground cable would use typical 6-foot deep 230 kV duck bank.

The generator tie-line would then be connected to the existing Otay Mesa switchyard. Power would be distributed to the grid via existing transmission lines from the Otay Mesa switchyard (PPEC 2011a Section3.5.5, 3.7, Figure 3.5-3, Figure 3.7-1B, Figure 3.7-1C, Figure 3.7-1D, Figure 3.7-2).

These proposed facilities are acceptable to staff and Conditions of Certification TSE-1 through 7 ensure these facilities comply with LORS.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

For the interconnection of a proposed generating unit or transmission facility to the grid, the interconnecting utility (SDG&E in this case) and the control area operator (California ISO) are responsible for ensuring grid reliability. These entities determine the transmission system impacts of the proposed project, and any mitigation measures needed to ensure system conformance with performance levels required by utility reliability criteria, NERC planning standards, WECC reliability criteria, and California ISO reliability criteria. The Phase I and Phase II Interconnection Studies are used to determine the impacts of the proposed project on the transmission grid. Staff relies on these studies and any review conducted by the California ISO to determine the project's effect on the transmission grid and to identify any necessary downstream facilities or indirect project impacts required to bring the transmission network into compliance with applicable reliability standards.

The Phase I and Phase II Interconnection Studies analyze the grid with and without the proposed project under conditions specified in the planning standards and reliability criteria. The standards and criteria define the assumptions used in the study and establish the thresholds through which grid reliability is determined. The studies must analyze the impact of the project for the first year of operation and thus are based on a forecast of loads, generation, and transmission. Load forecasts are developed by the interconnecting utility and the California ISO. Generation and transmission forecasts are established by an interconnection queue. The studies are focused on thermal overloads, voltage deviations, system stability (excessive oscillations in generators and transmission system, voltage collapse, loss of loads, or cascading outages), and short circuit duties.

If the Phase I and Phase II Interconnection Studies show that the interconnection of the project causes the grid to be out of compliance with reliability standards, then the studies will identify mitigation alternatives or ways in which the grid could be brought into compliance with reliability standards. When a project connects to the grid controlled by California ISO, both the studies and mitigation alternatives must be reviewed and approved by the California ISO. If the mitigation identified by California ISO or interconnecting utility includes transmission modifications or additions that require CEQA review as part of the "whole of the action," the Energy Commission must analyze the environmental impacts of these modifications or additions.

CALIFORNIA INDEPENDENT SYSTEM OPERATOR STUDY

The California ISO has completed the C1C2[1] Projects Phase II Interconnection Study (Phase II Interconnection Study) which included the PPEC and other proposed generators and the C1C2 Projects Phase II Appendix A – C574 Individual Project Report (Individual Project Report). The analysis of the interconnection impacts of the PPEC will be based on the Phase II Interconnection Study.

SCOPE OF C1C2 PROJECTS PHASE II INTERCONNECTION STUDY

The August 24, 2011, C1C2 Projects Phase II Interconnection Study Report was prepared by the California ISO in coordination with SDG&E. The Phase II Interconnection Study modeled the PPEC project with a net output of 308 MW.

The Power Flow base cases use the 1-in-10 year load forecast for the SDG&E Area. The 2014 Heavy Summer peak load and 2014 Light Load base cases included all pre-C1C2 generation projects and the associated Network Upgrades and Special Protection System, as well as all the California ISO approved transmission upgrade projects through 2014. The Phase II Interconnection Study also included a second Hassayampa-North Gila 500 kV transmission line in Arizona Public Service area which was expected to begin operating in 2014. The detailed study assumptions were described in the Phase II Interconnection Study.

The power flow studies were conducted using 2014 heavy summer and 2014 light load base cases with and without the proposed C1C2 generation projects interconnect to the SDG&E grid at each project's proposed interconnection point. The Power Flow study assessed the C1C2 generation projects' impact on thermal loading of the transmission lines and equipment. Short circuit studies were conducted to determine if the C1C2 generation projects would overstress existing substation facilities. Transient Stability Analysis were conducted using the 2015 heavy summer and 2015 light load base cases to determine whether the C1C2 generation projects would create instability in the system following certain selected outages. Post-Transient Voltage Stability Analysis were conducted using the 2015 heavy summer and the 2015 light load base cases to determine whether the C1C2 generation projects would create voltage deviations in the system following lines and equipment outages (PPEC 2011v Section 1, Section 4, Section 7, Section 9, Appendix A).

[1] C1C2 refers to Cluster 1 and Cluster 2 in the California ISO's Generator Interconnection Queue. For the Phase II Study that included PPEC all the projects in Cluster 1 and Cluster 2 were studied together.

PHASE II INTERCONNECTION STUDY RESULTS FOR C1C2 PROJECTS

Power Flow Study Results and Mitigation Measures

The C1C2 Phase II Interconnection Study identified pre-project overload criteria violations under the 2014 heavy summer and the 2014 light load study conditions. Pre-project overloads are caused by either existing system conditions or by projects with higher positions in the SDG&E's generator interconnection queue. The study concluded that the addition of the C1C2 projects would cause normal overloads and emergency overloads. Section 4 and 5 of the Individual Project Report listed details of the Power Flow study results and proposed mitigation measures (PPEC 2011v, PPEC 2011t).

Under Normal Overloads (N-0) Condition in SDG&E Area:
The Power Flow study indicated that the C1C2 Projects and specifically the PPEC project would cause transmission line overloads in the following area under normal operating conditions using the 2014 heavy summer peak and the 2014 light load study cases.

- Otay Mesa Area

Under Category B (N-1) Conditions in SDG&E Area:
The Power Flow study indicated that the C1C2 Projects would cause N-1overloads in the following area and transmission lines using the 2014 heavy summer peak load and the 2014 light load study cases.

- Otay Mesa Area
- Otay Mesa - Miguel 230 kV line #1
- Otay Mesa - Miguel 230 kV line #2
- Escondido – Palomar 230 kV line #1
- Escondido – Palomar 230 kV line #2
- Friars - Doublet Tap 138 kV line

Under Category C (N-2) Conditions in SDG&E Area:
The Power Flow study indicated that C1C2 Projects would cause N-2 overloads in the following area and transmission lines using the 2014 heavy summer peak load and the 2014 light load study cases.

- Otay Mesa Area
- Bernardo - Felicita Tap 69 kV line
- Mission - Old Town 230 kV line
- Cannon - San Luis Rey 138 kV line

Under Category B (N-2) Conditions in SCE Area:
The Power Flow study indicated that C1C2 Projects would cause N-2 overloads to the SCE transmission system. Details are listed in the Phase II Interconnection Study.

Mitigation:

Mitigation of the above transmission line overloads has been identified in two categories: **Reliablility Network Upgrades** and **Delivery Network Upgrades**. Reliability upgrades are required in order to meet system reliability standards for the interconnection of the projects in the studied cluster. Delivery network upgrades are required only when an interconnecting generator requests full delivery interconnection service, often required in order to receive capacity payments or meet contractual requirements. PPEC is a full delivery generator and thus delivery network upgrades identified for the generating cluster could be downstream impacts of the PPEC.

Under the Reliability Network Upgrades, installation of SPS is recommended to mitigate the following line overloads.

- Otay Mesa - Miguel 230 kV line #1 and #2
  Modify the existing SPS to drop generation in the Otay Mesa Substation area to mitigate Category B line overloads for outages on either the Otay Mesa - Miguel 230 kV line #1 or #2. Also, the modified SPS would mitigate Category C overloads for outages on both of the Otay Mesa - Miguel 230 kV lines. The SPS cost allocation for the PPEC is 100% which means that the PPEC is the primary responsible party.

- Bernardo - Felicita Tap 69 kV line
  Install SPS to protect the Bernardo - Feliciata Tap 69 kV line for Category C contingency for outage on both Escondido - Palomar Energy 230 kV lines. The SPS cost allocation for the PPEC is 100% which means that the PPEC is the primary responsible party.

- Mission - Old Town 230 kV line
  Install SPS to drop some of the C1C2 generations to protect the Bernardo - Feliciata Tap 69 kV line for Category C contingency. The SPS cost allocation for the PPEC is 100% which means that the PPEC is the primary responsible party.

- Cannon - San Luis Rey 138 kV line
  Install SPS to trip the San Luis Rey 138/69 kV transformer bank to protect the Cannon - San Luis Rey 138 kV line for the Category C contingency outage on both of the Encina - San Luis Rey 230 kV line and the Encina - San Luis Rey - Palomar 230 kV line. The SPS cost allocation for the PPEC is 100% which means that the PPEC is the primary responsible party.

Under the Delivery Network Upgrades, the Phase II Interconnection Study recommends reconfiguration and reconductoring the overloaded transmission lines to allow for the full delivery of generation. The reconductoring of existing transmission lines owned by SDG&E would be licensed by the California Public Utilities Commission (CPUC). Through the CPUC licensing process environmental

impacts would be identified and, where necessary, mitigated. Reconductoring would be a reasonably foreseeable consequence of the PPEC and a general environmental analysis of the reconductoring should be included in Staff's final assessment of the PPEC.

- Reconfigure TL23041 and TL23042 at Miguel Substation

  Reconfigure TL23041 and TL23042 at Miguel Substation and create two 230 kV lines connecting the Otay Mesa and Miguel Substations. The interconnection between these two substations would require the installation of a 600 foot long transmission line using 900 ACSS/AW overhead conductor, steel poles, new 230 kV breakers, disconnect switches, relays and other interconnection equipments. This reconfiguration will mitigate Category A, B, and C overloads in the Otay Mesa area. The cost allocation for the PPEC is approximately 85% which means that the PPEC is the primary responsible party for this reconfiguration and that even if all the other projects in the cluster were never built; the reconfiguration would likely be required for the PPEC.

- Reconductor a portion of the Escondido - Palomar Energy #1 and #2 230 kV lines and Convert two existing 69 kV overhead lines to underground cables

  Reconductor a 1,200 foot portion of Escondido - Palomar Energy #1 and #2 230 kV lines that are currently strung with 605 ACSS/AW conductor to 900 ACSS/AW conductor. The reconductoring would require installation of new cross arms for a 230 kV pole.

  Convert two existing 69 kV overhead lines which are currently located 60 feet east of the Escondido – Palomar Energy lines to two underground cables. The underground portion of the 69 kV cable is approximately 600 feet long south of the Escondido Substation.

  The upgrades will mitigate Category B overloads. The cost allocation for the PPEC is approximately 31% which means that the PPEC is partly responsible for the upgrade.

- Reconductor Friars - Doublet Tap 138 kV line

  Reconductor a 10,500 foot portion of the Friars - Doublet Tap 138 kV line with 636 ACSR/AW conductor or a conductor with higher capacity. The reconductoring will mitigate Category B overloads. The cost allocation for the PPEC is approximately 70% which means that the PPEC is the primary responsible party for this reconductoring and that even if all the other projects in the cluster were never built; the reconductoring would likely be required for the PPEC.

  The C1C2 Phase II Interconnection Study also identified transmission line overloads to the SCE transmission system due to the addition of the C1C2 generation projects. The following **Delivery Network Upgrades** are recommended for the SCE system.

- Loop Lugo – Mohave 500 kV line into Pisgah Substation
- Add series capacitor banks on Nipton – Pisgah and Mohave – Pisgah 500 kV lines
- Add new Red Bulff – Valley 500 kV line
- Add new Colorado River – Red Bluff 500 kV line

The cost allocation of each upgrade listed above for the PPEC is approximately from 5% to 7% which means that the PPEC is not the primary responsible party for these upgrades. Staff does not believe that these upgrades should be a reasonably foreseeable consequence of the PPEC.

Short Circuit Study Results, Mitigation Measures and Substation Evaluation

Short Circuit studies were performed to determine the degree to which the addition of the C1C2 generation projects increase fault duties at SDG&E's substations, adjacent utility substations, and the other 69 kV, 138 kV, 230 kV and 500 kV busses within the study area. The fault duties were calculated with and without the C1C2 generation projects to identify any equipment overstress conditions. Buses electrically adjacent to C1C2 generation projects and their short circuit duties are listed in Appendix A. The short circuit duties related just to the PPEC are listed in Attachment 4. The short circuit initial study identified that the C1C2 generation projects along with the PPEC plus the associated Delivery Network Upgrades will not cause any circuit breakers in the SDG&E system to be overstressed.

The reconfiguration at the SDG&E Miguel 230 Substation would overstress circuit breaker(s) in the Tijuana 230 kV bus in the Comision Federal de Electricidad (CFE) system. The California ISO would coordinate with the CFE to further analyze the impacted equipments and identify the required mitigation (PPEC 2011v Section 6.2, PPEC 2011v Attachment 4).

Transient Stability Study Results and Mitigation Measures

Transient stability studies were conducted using the 2015 heavy summer and 2015 light load base cases to ensure that the transmission system remained in operating equilibrium, as well as operating in a coordinated fashion, through abnormal operating conditions after the C1C2 generation projects became operational. Disturbance simulations were performed for a study period of 10 seconds for pre-C1C2 generation projects cases and 20 seconds for the post-C1C2 generation project cases to determine whether the C1C2 generation projects would create any system instability during line and generator outages. The Transient Stability study result indicated that the PPEC would not cause adverse impacts on the stable operation of the transmission system following the selected Category "B" and Category "C" outages (PPEC 2011v Section 7).

POST-TRANSIENT VOLTAGE ANALYSIS RESULTS

Post-Transient Stability Analysis was conducted using the 2015 heavy summer and 2015 light load base cases. NERC/WECC planning standards require that with the addition of the C1C2 generation projects, the SDG&E system post-transient voltage

deviation within 5% of the pre-project level under Category B contingencies and within 10% of pre-project levels under Category C contingencies. The Post-Transient Stability Analysis indicated that the addition of the C1C2 generation projects along with the PPEC would not cause any adverse impacts to the SDG&E system.

Reactive Power Deficiency Analysis Results

Reactive power deficiency analysis was performed to determine the system performance according to the NERC/WECC planning criteria. The reactive power deficiency analysis indicated that the addition of the C1C2 generation projects including the PPEC and with all the Delivery Network Upgrades for the C1C2 generation projects would not contribute to any reactive power margin violations at SDG&E buses following selected Category "B" and Category "C" contingencies (PPEC 2011v Section 9).

CUMULATIVE IMPACTS

The TSE analysis focuses on whether or not a proposed project will meet required codes and standards. At all times the transmission grid must remain in compliance with reliability standards, whether one project or many projects interconnect. Potential cumulative impacts on the transmission network are identified through the California ISO and utility generator interconnection process. In cases where a significant number of proposed generation projects could affect a particular portion of the transmission grid, the interconnecting utility or the California ISO can study the cluster of projects in order to identify the most efficient means to interconnect all the proposed projects.

COMPLIANCE WITH LORS

The proposed interconnecting facilities including the PPEC 230 kV switchyard, both route A, a single 230 kV overhead line and continue with a single 230 kV underground cable, and route B, a single 230 kV overhead generator tie-lines, and the termination at the proposed SDG&E Otay Mesa switchyard are adequate and in accordance with industry standards and good utility practices, and are acceptable to staff according to engineering LORS.

Staff proposed conditions of certification TSE-1 through TSE-7 would help ensure that construction and operation of the transmission facilities for the proposed PPEC would comply with applicable LORS.

The Phase II Interconnection Study indicates that the project interconnection would comply with all NERC/WECC planning standards and California ISO reliability criteria as long as the identified Reliability Network Upgrades are implemented.

CONCLUSIONS AND RECOMMENDATIONS

The proposed interconnection facilities including the PPEC 230 kV switchyard, both route A, a single 230 kV overhead line and continue with a single 230 kV underground cable, and route B, a single 230 kV overhead generator tie-line, and the termination at the proposed SDG&E Otay Mesa switchyard are adequate and in accordance with

industry standards and good utility practices, and are acceptable to staff according to engineering LORS.

- The interconnection of the PPEC will cause new transmission line overloads under normal and contingency conditions. Mitigation includes installation of SPS, reconfiguration of existing transmission lines, and reconductoring overloaded transmission lines. The applicant is part of a cluster of projects whose interconnection triggers the need for transmission system upgrades.

    1. The following transmission system upgrades are reasonably foreseeable consequences of the interconnection of the PPEC and require environmental analysis:

        - The reconductor of the 1,200 foot-long Escondido - Palomar Energy #1 and #2 230 kV transmission lines.
        - The reconductor of the 10,500 foot-long Friars - Doublet Tap 138 kV line transmission line.
        - The conversion of two 600 foot-long 69 kV overhead lines to underground cables near the Escondido Substation.

- The interconnection of the PPEC and other generators included in the Phase II Interconnection Study would not result any overstressed breakers in the SDG&E system. Other existing breakers are adequate to withstand the post project incremental fault currents described in the Short Circuit Study. The reconfiguration of the TL23041 and TL23042 at the Miguel Substation will cause overstressed breaker(s) in the CFE system. The California ISO will coordinate the necessary mitigation with the CFE.

PROPOSED CONDITIONS OF CERTIFICATION

TSE-1 The project owner shall furnish to the CPM and to the CBO a schedule of transmission facility design submittals, a Master Drawing List, a Master Specifications List, and a Major Equipment and Structure List. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major structures and equipment. To facilitate audits by Energy Commission staff, the project owner shall provide designated packages to the CPM when requested.

Verification: Prior to the start of construction, the project owner shall submit the schedule, a Master Drawing List, and a Master Specifications List to the CBO and to the CPM. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major structures and equipment (see a list of major equipment in **Table 1**: Major Equipment List below). Additions and deletions shall be made to the table only with CPM and CBO approval. The project owner shall provide schedule updates in the Monthly Compliance Report.

Table 1: Major Equipment List
Breakers
Step-up transformer
Switchyard
Busses
Surge arrestors
Disconnects
Take-off facilities
Electrical control building
Switchyard control building
Transmission pole/tower
Grounding system

TSE-2 Before the start of construction, the project owner shall assign to the project an electrical engineer and at least one of each of the following:

Verification: a civil engineer;

Verification: a geotechnical engineer or a civil engineer experienced and knowledgeable in the practice of soils engineering;

Verification: a design engineer who is either a structural engineer or a civil engineer and fully competent and proficient in the design of power plant structures and equipment supports; or

Verification: a mechanical engineer (Business and Professions Code Sections 6704 et seq. require state registration to practice as either a civil engineer or a structural engineer in California).

The tasks performed by the civil, mechanical, electrical, or design engineers may be divided between two or more engineers as long as each engineer is responsible for a particular segment of the project, e.g., proposed earthwork, civil structures, power plant structures, or equipment support. No segment of the project shall have more than one responsible engineer. The transmission line may be the responsibility of a separate California registered electrical engineer. The civil, geotechnical, or civil and design engineer, assigned as required by Facility Design Condition **GEN-5**, may be responsible for design and review of the TSE facilities.

The project owner shall submit to the CBO, for review and approval, the names, qualifications, and registration numbers of all engineers assigned to the project. If any one of the designated engineers is subsequently reassigned or replaced, the project owner shall submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer. This engineer shall be authorized to halt earth work and require changes; if site conditions are unsafe or do not conform with the predicted conditions used as the basis for design of earth work or foundations.

The electrical engineer shall:

Chapter 1 be responsible for the electrical design of the power plant switchyard, outlet, and termination facilities; and

Chapter 2 sign and stamp electrical design drawings, plans, specifications, and calculations.

Verification: Prior to the start of rough grading, the project owner shall submit to the CBO for review and approval, the names, qualifications, and registration numbers of all the responsible engineers assigned to the project. The project owner shall notify the CPM of the CBO's approvals of the engineers within five days of the approval.

If the designated responsible engineer is subsequently reassigned or replaced, the project owner has five days in which to submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

TSE-3 If any discrepancy in design and/or construction is discovered in any engineering work that has undergone CBO design review and approval, the project owner shall document the discrepancy and recommend corrective action (2001 California Building Code, Chapter 1, section 108.4, approval required; Chapter 17, section 1701.3, *Duties and Responsibilities of the Special Inspector;* Appendix Chapter 33, section 3317.7, *Notification of Noncompliance*). The discrepancy documentation shall become a controlled document and shall be submitted to the CBO for review and approval and refer to this condition of certification.

Verification: The project owner shall submit a copy of the CBO's approval or disapproval of any corrective action taken to resolve a discrepancy to the CPM within 15 days of receipt. If disapproved, the project owner shall advise the CPM, within five days, the reason for the disapproval, along with the revised corrective action required to obtain the CBO's approval.

TSE-4 For the power plant switchyard, outlet line and termination, the project owner shall not begin any construction until plans for that increment of construction have been approved by the CBO. These plans, together with design changes and design change notices, shall remain on the site for one year after completion of construction. The project owner shall request that the CBO inspect the installation to ensure compliance with the requirements of applicable LORS. The following activities shall be reported in the monthly compliance report:

1. receipt or delay of major electrical equipment;
2. testing or energization of major electrical equipment; and
3. the number of electrical drawings approved, submitted for approval, and still to be submitted.

Verification: Prior to the start of each increment of construction, the project owner shall submit to the CBO for review and approval the final design plans, specifications and calculations for equipment and systems of the power plant switchyard, and outlet line and termination, including a copy of the signed and stamped statement from the responsible electrical engineer verifying compliance with all applicable LORS, and send the CPM a copy of the transmittal letter in the next monthly compliance report.

TSE-5 The project owner shall ensure that the design, construction, and operation of the proposed transmission facilities will conform to all applicable LORS, and the requirements listed below. The project owner shall submit the required number of copies of the design drawings and calculations, as determined by the CBO. Once approved, the project owner shall inform the CPM and CBO of any anticipated changes to the design, and shall submit a detailed description of the proposed change and complete engineering, environmental, and economic rationale for the change to the CPM and CBO for review and approval.

1. The power plant outlet line shall meet or exceed the electrical, mechanical, civil, and structural requirements of CPUC General Order 95 or National Electric Safety Code (NESC); Title 8 of the California Code and Regulations (Title 8); Articles 35, 36 and 37 of the *High Voltage Electric Safety Orders*, California ISO standards, National Electric Code (NEC) and related industry standards.
2. Breakers and busses in the power plant switchyard and other switchyards, where applicable, shall be sized to comply with a short-circuit analysis.
3. Outlet line crossings and line parallels with transmission and distribution facilities shall be coordinated with the transmission line owner and comply with the owner's standards.
4. The project conductors shall be sized to accommodate the full output of the project.
5. Termination facilities shall comply with applicable SDG&E interconnection standards.
6. The project owner shall provide to the CPM:
   i. The Special Protection System (SPS) sequencing and timing if applicable,
   ii. A letter stating that the mitigation measures or projects selected by the transmission owners for each reliability criteria violation, for which the project is responsible, are acceptable,
   iii. A copy of the executed LGIA signed by the California ISO and the project owner and approved by the Federal Energy Regulatory Commission.

Verification: Prior to the start of construction or start of modification of transmission facilities, the project owner shall submit to the CBO for approval:

Protocol: Design drawings, specifications, and calculations conforming with CPUC General Order 95 or National Electric Safety Code (NESC); Title 8 of the California Code and Regulations (Title 8); Articles 35, 36 and 37 of the *High Voltage Electric Safety Orders*, CA ISO standards, National Electric Code (NEC) and related industry standards, for the poles/towers, foundations, anchor bolts, conductors, grounding systems, and major switchyard equipment;

Protocol: For each element of the transmission facilities identified above, the submittal package to the CBO shall contain the design criteria, a discussion of the calculation method(s), a sample calculation based on "worst case conditions"[2] and a statement signed and sealed by the registered engineer in responsible charge, or other acceptable alternative verification, that the transmission element(s) will conform with CPUC General Order 95 or National Electric Safety Code (NESC); Title 8 of the California Code and Regulations (Title 8); Articles 35, 36 and 37 of the *High Voltage Electric Safety Orders*, California ISO standards, National Electric Code (NEC), and related industry standards;

Protocol: Electrical one-line diagrams signed and sealed by the registered professional electrical engineer in charge, a route map, and an engineering description of the equipment and configurations covered by requirements **TSE-5** a) through f);

Protocol: The Special Protection System (SPS) sequencing and timing if applicable shall be provided concurrently to the CPM.

Protocol: A letter stating that the mitigation measures or projects selected by the transmission owners for each reliability criteria violation, for which the project is responsible, are acceptable,

Protocol: A copy of the executed LGIA signed by the California ISO and the project owner and approved by the Federal Energy Regulatory Commission.

Prior to the start of construction of or modification of transmission facilities, the project owner shall inform the CBO and the CPM of any anticipated changes to the design that are different from the design previously submitted and approved and shall submit a detailed description of the proposed change and complete engineering, environmental, and economic rationale for the change to the CPM and CBO for review and approval.

TSE-6 The project owner shall provide the following Notice to the California Independent System Operator (California ISO) prior to synchronizing the facility with the California Transmission system:

- At least one week prior to synchronizing the facility with the grid for testing, provide the California ISO a letter stating the proposed date of synchronization; and

- At least one business day prior to synchronizing the facility with the grid for testing, provide telephone notification to the California ISO Outage Coordination Department.

[1] Worst-case conditions for the foundations would include for instance, a dead-end or angle pole.

- The project owner shall provide copies of the California ISO letter to the CPM when it is sent to the California ISO one week prior to initial synchronization with the grid. The project owner shall contact the California ISO Outage Coordination Department, Monday through Friday, between the hours of 0700 and 1530 at (916) 351-2300 at least one business day prior to synchronizing the facility with the grid for testing. A report of conversation with the California ISO shall be provided electronically to the CPM one day before synchronizing the facility with the California transmission system for the first time.

TSE-7 The project owner shall be responsible for the inspection of the transmission facilities during and after project construction, and any subsequent CPM and CBO approved changes thereto, to ensure conformance with CPUC GO-95 or NESC, Title 8, CCR, Articles 35, 36 and 37 of the, "High Voltage Electric Safety Orders", applicable interconnection standards, NEC and related industry standards. In case of non-conformance, the project owner shall inform the CPM and CBO in writing, within 10 days of discovering such non-conformance and describe the corrective actions to be taken.

Verification: Within 60 days after first synchronization of the project, the project owner shall transmit to the CPM and CBO:

- "As built" engineering description(s) and one-line drawings of the electrical portion of the facilities signed and sealed by the registered electrical engineer in responsible charge. A statement attesting to conformance with CPUC GO-95 or NESC, Title 8, California Code of Regulations, Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders", and applicable interconnection standards, NEC, related industry standards.

- An "as built" engineering description of the mechanical, structural, and civil portion of the transmission facilities signed and sealed by the registered engineer in responsible charge or acceptable alternative verification. "As built" drawings of the electrical, mechanical, structural, and civil portion of the transmission facilities shall be maintained at the power plant and made available, if requested, for CPM audit as set forth in the "Compliance Monitoring Plan".

- A summary of inspections of the completed transmission facilities, and identification of any nonconforming work and corrective actions taken, signed and sealed by the registered engineer in charge

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DEFINITION OF TERMS

AAC	All aluminum conductor.
ACSR	Aluminum conductor steel-reinforced.
ACSS	Aluminum conductor steel-supported.
Ampacity	Current-carrying capacity, expressed in amperes, of a conductor at specified ambient conditions, at which damage to the conductor is nonexistent or deemed acceptable based on economic, safety, and reliability considerations.
Ampere	The unit of current flowing in a conductor.
Bundled	Two wires, 18 inches apart.
Bus	Conductors that serve as a common connection for two or more circuits.
Conductor	The part of the transmission line (the wire) that carries the current.
Congestion management	A scheduling protocol, which provides that dispatched generation and transmission loading (imports) will not violate criteria.

Double–contingency condition
: Also known as emergency or N-2 condition, a forced outage of two system elements usually (but not exclusively) caused by one single event. Examples of an N-2 contingency include loss of two transmission circuits on a single tower line or loss of two elements connected by a common circuit breaker due to the failure of that common breaker.

Emergency overload
: See single–contingency condition. This is also called an N-1 condition.

kcmil
: One-thousand circular mil. A unit of the conductor's cross-sectional area divided by 1,273 to obtain the area in square inches.

Kilovolt (kV)
: A unit of potential difference, or voltage, between two conductors of a circuit, or between a conductor and the ground.

Loop
: An electrical cul-de-sac. A transmission configuration that interrupts an existing circuit, diverts it to another connection, and returns it back to the interrupted circuit, thus forming a loop or cul-de-sac.

Megavar
: One megavolt ampere reactive.

Megavars
: Mega-volt-ampere-reactive. One million volt-ampere-reactive. Reactive power is generally associated with the reactive nature of motor loads that must be fed by generation units in the system.

Megavolt ampere (MVA)
: A unit of apparent power equal to the product of the line voltage in kilovolts, current in amperes, the square root of 3, and divided by 1000.

Megawatt (MW)
: A unit of power equivalent to 1,341 horsepower.

N-0 condition
: See normal operation/normal overload.

Normal operation/normal overload (N-0)
: When all customers receive the power they are entitled to without interruption and at steady voltage, and no element of the transmission system is loaded beyond its continuous rating.

N-1 condition
: See single–contingency condition.

N-2 condition
: See double–contingency condition.

Outlet
: Transmission facilities (e.g., circuit, transformer, circuit breaker) linking generation facilities to the main grid.

Power flow analysis
: A power flow analysis is a forward-looking computer simulation of essentially all generation and transmission system facilities that identifies overloaded circuits, transformers, and other equipment and system voltage levels.

Reactive power
: Reactive power is generally associated with the reactive nature of motor loads that must be fed by generation units in the system. An adequate supply of reactive power is required to maintain voltage levels in the system.

Remedial action scheme (RAS)
: A remedial action scheme is an automatic control provision, which, for instance, will trip a selected generating unit upon a circuit overload.

SF6
: Sulfur hexafluoride is an insulating medium.

Single–contingency condition
: Also known as emergency or N-1 condition, occurs when one major transmission element (e.g., circuit, transformer, circuit breaker) or one generator is out of service.

Solid dielectric cable
: Copper or aluminum conductors that are insulated by solid polyethylene-type insulation and covered by a metallic shield and outer polyethylene jacket.

Special protection scheme/system (SPS)
: An SPS detects a transmission outage (either a single or credible multiple contingency) or an overloaded transmission facility and then trips or runs back generation output to avoid potential overloaded facilities or other criteria violations.

Switchyard
: A power plant switchyard is an integral part of a power plant and is used as an outlet for one or more electric generators.

Thermal rating
: See ampacity.

TSE
: Transmission System Engineering.

Tap
: A transmission configuration creating an interconnection through a sort single circuit to a small- or medium-sized load or generator. The new single circuit line is inserted into an existing circuit by using breakers at existing terminals of the circuit, rather than installing breakers at the interconnection in a new switchyard.

Undercrossing
: A transmission configuration where a transmission line crosses below the conductors of another transmission line, generally at 90 degrees.

Underbuild
: A transmission or distribution configuration where a transmission or distribution circuit is attached to a transmission tower or pole below (under) the principle transmission line conductors.

APPENDIX A

TRANSMISSION SYSTEM ENGINEERING

ENVIRONMENTAL ANALYSIS OF POTENTIAL IMPACTS ARISING FROM UPGRADES TO THE ELECTRICITY TRANSMISSION SYSTEM NETWORK

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APPENDIX TO TRANSMISSION SYSTEM ENGINEERING

Environmental Analysis of Potential Impacts Arising from Limited Reconductoring of the Electricity Transmission Network

Prepared by Mark Hesters and Eric Solorio

1.0 INTRODUCTION AND PRUPOSE

Energy Commission staff has prepared this Transmission System Engineering Appendix to the Preliminary Staff Assessment (PSA) for the Pio Pico Energy Center (PPEC) project. This appendix presents an environmental analysis of the potential effects of upgrading three transmission and sub-transmission line segments as a result of the PPEC interconnecting with the California Independent System Operator (CAISO) electrical grid beyond the first point of interconnection.

The Energy Commission has the exclusive authority to certify the construction and operation of thermal electric power plants 50 megawatts (MW) or larger and associated facilities. The Energy Commission also has the licensing authority up to the first point of interconnection for transmission facilities. Additionally, under the California Environmental Quality Act (CEQA), the Energy Commission must conduct an environmental review of the "whole of the action," which may include facilities not licensed by the Energy Commission. Therefore, the Energy Commission must identify the system impacts and necessary new or modified transmission facilities downstream of the proposed interconnection that are required for interconnection and represent the "whole of the action."

Pio Pico Energy Center, LLC (Applicant) submitted a request to the CAISO for interconnecting the PPEC to the CAISO-controlled grid in November 2010. CAISO subsequently completed a Phase II Interconnection Study (CAISO 2011) to determine the impacts of the PPEC along with other electric generation projects on CAISO system facilities. Under the Federal Energy Regulatory Commission-approved Large Generator Interconnection Procedures, interconnection requests are now processed together in clusters. A total of twelve proposed generation projects were grouped together in Cluster 1, Cluster 2, and Small Generator Transition Cluster projects (C1C2 Projects), totaling a maximum net output-to-grid of 1,716.5 megawatts (MW), including 308 MW for PPEC. Their transmission system impacts were assessed as a group, but with the relative contribution of each proposed project in the cluster assigned a percentage weight.

The Transition Cluster Phase II Interconnection Study identified potential overloads on the downstream transmission facilities that could occur with the addition of all twelve projects, including PPEC, in the cluster. In order to eliminate the identified overloads, preferred mitigation options identified in the Phase II Study include reconductoring of the overloaded lines with higher capacity conductors, extending undergrounded existing lines, reconductoring older lines with in-kind conductors, and replacing substation equipment.

The Phase II Study identified the PPEC project as having a portion of cost responsibility, which includes the following:

1) Escondido – Palomar 230 kilovolt (kV) #1 and #2 Lines (refer to Figure 1)

- Reconductor Escondido – Palomar 230-kV #1 and #2 lines (approximately 1,200 circuit feet, or less than 0.25 mile)
- Relocate two overhead 69-kV (sub-transmission) circuits underground (approximately 600 feet, or 0.1 mile)

2) Friars – Doublet Tap 138-kV Line (refer to Figure 2): Reconductor 10,500 feet (less than 2 miles) for the Friars – Doublet Tap 138-kV Line with 636-kcmil aluminum-conductor steel-reinforced (ACSR) cable

The CEC's direct jurisdiction extends to the first point of interconnection with the electrical transmission system at the SDG&E Otay Mesa Switchyard. The PPEC February 2011 AFC included an analysis of all PPEC project facilities to that point. The transmission network upgrade program will be permitted specifically under the jurisdiction of the California Public Utilities Commission (CPUC), and CPUC will be responsible for preparing the appropriate California Environmental Quality Act (CEQA) documents with specific mitigation requirements as needed when issuing its authorization for SDG&E to implement the program.

As noted above, the CAISO's Phase II Study for the Transition Cluster (C1C2 Projects) identifies transmission system upgrades that are predicted to be needed to accommodate the interconnection of all of the 12 projects in the cluster. The predicted upgrades reflect the total of 1,716.5 MW of new capacity, including 308 MW for the PPEC project. The transmission network upgrades identified by the Phase II Study are not solely caused by the PPEC. Nevertheless, the following analysis was prepared to assist CEC Staff in disclosing the potential environmental effects due to the identified transmission upgrades.

This analysis describes the process of network upgrades (i.e., reconductoring and underground relocation) and the types of environmental impacts that might occur as a result. Project-specific details regarding the locations of the pull and tensioning sites and staging areas, and the specific techniques that would be used for each span, however, will not be available until the upgrade project is designed by SDG&E. In general, however, the upgrade activities would use historic stringing sites, existing easements, and SDG&E property. The upgrades, if implemented, could be accomplished with no significant environmental impacts, if appropriate best management practices (BMPs), and mitigation measures are applied.

Because the segments to be upgraded lie beyond the first point of interconnection with the grid and because they will be carried out by a separate entity (SDG&E) at a future time and under the permitting jurisdiction of a separate authorizing agency (the CPUC), the information provided herein gives an overview of potential indirect impacts associated with transmission system upgrades that may result from the PPEC project. It is also important to note that because the upgrade project owner will be SDG&E and not the Applicant, this analysis cannot commit the project to specific BMPs or mitigation measures that would or must be carried out by SDG&E. SDG&E, however, is a regulated public utility that has developed standard operating procedures that include

BMPs recognized by regulatory agencies and the electric power industry as effective measures to avoid, mitigate, or minimize adverse environmental impacts during network upgrade operations. In this analysis, it is assumed that SDG&E would apply BMPs that are standard requirements for similar projects. Final mitigation planning would take place through the CPUC's regulatory process.

2.0 DESCRIPTION OF THE PROPOSED PROJECT

This section identifies the specific transmission (and sub-transmission) line segments that may be upgraded and provides a general level overview of the upgrade process applicable to the reconductored portions and underground relocating portions. A basic description of the work involved in the respective upgrading activity is presented below.

2.1 PROJECT LOCATION

The Phase II Study for the C1C2 transition cluster predicts that SDG&E may need to upgrade portions of two transmission line systems, relocate portions of two overhead 69-kV lines underground, and replace substation equipment within its electrical grid. Refer to Figure 1 and Figure 2, which show the locations of the upgrade improvements on recent aerial photography from 2010, and Figure 3 and Figure 4, which show the upgrade improvements on the respective USGS topographic quadrangle. The transmission line reconductoring consists of two line segments: approximately 1,200 feet of the Escondido-Palomar 230-kV #1 and #2 Lines, which were installed in 2005; and approximately 10,500 feet of the Friars-Doublet Tap 138-kV Line, which was constructed in 1957. Refer to Figure 1 and Figure 2, respectively. The total length of lines to be reconductored crosses approximately 11,700 feet, or 2.2 miles. Additionally, the network upgrade includes relocating approximately 600 feet of two 69-kV lines, which were installed in 2005, into one underground ductbank just south of Escondido Substation (Figure 1). Additionally, the transmission and sub-transmission line upgrades may include upgrades and/or replacement in-kind of switches and breakers at the Escondido Substation and Friars Substation for the respective line upgrades. Based on consultation with SDG&E, the equipment replacement would occur within the fenced-in structures of the substations, and would not involve below-grade work or soil disturbance.

The approximately 1,200-foot portion of the Escondido-Palomar 230-kV line and 600-foot portion of the 69-kV lines to be upgraded are located in the existing SDG&E right-of-way (ROW) within the western portion of the City of Escondido. The lines begin at the Escondido Substation located approximately 350 feet south of SR-78/Ronald Packard Parkway. The 69-kV lines terminate just north of the Palomar Power Project, and the 230-kV lines continue to Palomar Substation.

The portions of the lines identified for potential upgrade cross an existing parking lot and undeveloped area, and are both located on parcels owned by SDG&E. The 230-kV and 69-kV lines cross the cul-de-sac of Commercial Street. Additionally, the 230-kV lines also cross Auto Park Way, which is a City collector road. Uses along the upgrade project corridor include industrial, including a power plant, light industrial, and commercial uses.

The Friars-Doublet Tap 138-kV line is located in the City of San Diego, and extends south and west approximately 10,500 feet from the Friars Substation towards the Old Town Substation. Friars Substation, where the reconductoring begins, is located approximately 1,600 feet east of SR-163, and approximately 1 mile north of Interstate 8. The reconductoring project is located within an approximately 110-foot-wide ROW, which runs generally parallel to Friars Road, and crosses urban/developed and open areas. Approximately one-half of the corridor is located on SDG&E-owned parcels. The reconductoring crosses several County roads and State Route (SR)-163/Cabrillo Freeway.

2.2 CONSTRUCTION METHODS

The Escondido-Palomar 230-kV Lines #1 and #2 are 230-kV double-circuit lines with three conductors mounted on existing tubular steel poles (between 50 to 125 feet in height) in the existing SDG&E right-of-way. Reconductoring the approximately 1,200-foot segment of the double circuit lines with 900 kcmil ACSS/AW conductors would require replacement of two cross arms on one transmission pole. No excavation work and no other pole modifications are anticipated at this time.

Underground construction of approximately 600 feet of two 69-kV sub-transmission lines will also occur at the Escondido Substation. Currently, the two 69-kV lines consist of single circuits with three conductors mounted on tubular steel monopoles approximately 60 feet east of the Escondido-Palomar 230-kV lines, in the existing right of way. The network upgrade consists of undergrounding the two lines into one underground ductbank from the Escondido Substation extending approximately 600 feet south. Undergrounding the two 69-kV lines also involves removing two existing poles.

The Friars-Doublet Tap 138-kV line is a single-circuit, three conductor line mounted on existing tubular steel monopoles in the SDG&E ROW corridor. The transmission system upgrades for this line would consist of reconductoring approximately 10,500 feet with 636-kcmil ACSR/AW conductor. Based on consultation with SDG&E, no modifications to the existing poles are expected.

Prior to commencement of the overall network upgrade activities, SDG&E would coordinate with the CAISO for permission to take the existing line out of service. This action would ensure that adequate power is redistributed to substations and customers when the line is out of service. The project upgrades would be constructed using historic stringing sites in existing easements. No new access roads are anticipated. The project upgrades also include replacing several substation components associated with the transmission and subtransmission line disconnects and getaways. As described above, all substation work (i.e., at the Escondido Substation and Friars Substation) will take place aboveground inside the existing substation fenceline. No below-grade work is required that would disturb any soil.

Reconductoring

In general, reconductoring is accomplished by disconnecting the old conductor and using it like a rope to pull the new conductor through temporary pulleys, called “travelers” or “sheave blocks,” mounted on each pole, until it reaches the other end. Workers access each pole by truck, then climb the pole or use a truck-mounted aerial

bucket to access the pole, place the travelers on the pole arms, disconnect the conductors from their insulators, and place them on the travelers. Once this has been accomplished, the old line is connected to a winch and spool at the pulling site. As a winch pulls the old conductor through the travelers and off of the poles on one end of a work segment, new conductor is spooled from the tensioning spooling truck positioned at the other end of the work segment, and is pulled into place on the travelers by the old conductor as it is spooled off. The tensioning crew keeps the conductors taut, preventing them from sagging to the ground or other objects in the right-of-way. Workers then revisit each pole in the segment and move the new conductor off of the travelers and connect it with the insulator strings. Work crews set up temporary structures across roads and other potentially inhabited areas to protect those areas in the unlikely event that a conductor breaks and falls to the ground. If the old conductor is not in good enough condition to be used to pull in the new line, it is be used to pull a carrier cable, or “sock line,” through the pulleys to the end of the segment to be replaced; the sock line is then used to pull in the new conductor. Each pull station and tensioning station requires a construction staging area of approximately one acre.

Throughout the reconductoring project, temporary staging areas would be required for equipment and materials storage. The reconductoring project may require several staging yards, each about one acre in size, located near each end of the transmission line segments. Although it is not known at this time where the staging areas would be located, it is likely they would be located at existing storage areas near or at the substations during the construction period.

The existing transmission corridor would be accessed by trucks, all-terrain vehicles, and/or by foot. Based on consultation with SDG&E, access would be over existing roads, and no new access roads are anticipated. As shown on Figures 1 and 2, the construction areas would be located near existing roads and in existing ROWs. BMPs would be implemented during construction. Any disturbed areas would be restored to original conditions after project completion. In developed areas, access to poles would be from public roads or through developed private property or commercial lots. No new access roads would be constructed through drainages or wetlands. Helicopters may be used to string the lines. Helicopter reconductoring methods have proven highly effective where the terrain makes access difficult or there is a need to avoid disturbance to sensitive resources.

It is anticipated that all reconductoring work would be done within the existing SDG&E ROW along the existing transmission lines and within the footprint of the existing substations. Temporary construction areas (approximately 2 to 5 acres) would include material storage and laydown areas, temporary construction yards, and helicopter landing areas. These areas would be selected by engineering and construction personnel during the design phase, and are anticipated to be located on SDG&E-owned properties at the substations and along the transmission line routes. Work crews will have a great deal of flexibility in choosing the locations of the pull and tension sites and temporary staging areas; crews can generally select sites that avoid many environmental impacts.

At the end of construction, all temporary structures will be removed. Construction debris will be removed and hauled away for recycling or disposal. Areas disturbed during

construction will be returned to pre-construction conditions, unless otherwise agreed to with the landowner.

Undergrounding

For the Escondido-Palomar line, the approximately 600 feet of 69-kV sub-transmission line would be installed within a standard double-circuit underground ductbank, and may include an underground vault and transition structure, or riser. According to SDG&E, the ductbank would be located within a trench approximately 2.5 feet wide and a minimum of 5 feet deep.

Existing underground utilities would be identified and marked prior to the start of construction. A portion (approximately 60 feet) of the underground work would take place within the public road ROW of Commercial Street. A lane closure would be required and traffic control signage installed.

The ductbank installation would commence with using an excavator to remove the top soil in unpaved areas or the concrete/asphalt in paved areas. Large trucks haul away excavated subsoil materials to approved off-site location for disposal, or if appropriate, reuse. The ductbank is constructed using polyvinyl chloride (PVC) conduits and spacers encased in concrete, with vaults as required for cable pulling. Cable pulling and splicing can occur any time after the ductbanks and vaults are completed. When construction is completed, the parking lot, roadway, and any landscaped areas would be restored to their original condition and topography.

2.3 CONSTRUCTION SCHEDULE AND WORKERS

A schedule for the network upgrades has not been developed at this time. However, it is anticipated that construction associated with the reconductoring and undergrounding project could take approximately 4 to 6 months. Workers would occupy each pull and tension site for about 3 days. The reconductoring work would probably occur during times of relatively low electrical demand to protect system reliability while the lines are out of commission.

The network upgrade activities would involve setting up two work crews (for a total of 20 workers) on each end of a segment that is being replaced. Each crew would consist of approximately 10 workers, two tractor/trailer units, which either feed out the new line or wind in the old line on spools mounted on the trailers, and two or three utility trucks carrying tools, other materials, and workers, for a total of 6 to 8 trucks.

3.0 ANALYSIS OF TRANSMISSION NETWORK UPGRADES

3.1 AIR QUALITY

The downstream transmission network upgrade activities include two line segments that would require replacement of approximately 2.2 miles of transmission line. Reconductoring would require use of heavy-duty construction equipment and motor vehicles that would generate exhaust emissions and activity on unpaved surfaces causing fugitive dust emissions. Because the reconductoring activities would not require additional grading or the replacement of the existing transmission poles, the proposed

reconductoring activities would not significantly increase the number of pieces of equipment or the number of deliveries required for construction of PPEC. Approximately 20 extra workers would be present at any time during the 4 to 6 months of construction activities. The emissions associated with worker commutes would be expected to be very low.

Additional network upgrades include relocating approximately 600 feet of two 69-KV lines into one underground ductbank. The underground conductor would be installed in a standard double-circuit trench approximately 2.5 feet wide and 5 feet deep, which would require minor excavation. The undergrounding activities are not expected to result in significant air emissions due to the low level of surface disturbance.

Reconductoring and undergrounding activities would generate temporary (short-term) emissions similar to those of the PPEC construction phase. Exhaust emissions would occur from the operation of construction equipment and vehicles. Exhaust emissions would include carbon monoxide (CO), ozone precursors including nitrogen oxides (NO_x) and volatile organic compounds (VOC), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), fine particulate matter (PM2.5), and inhalable particles (PM10), including diesel particulate matter, a toxic air contaminant. Impacts from exhaust emissions from heavy-duty diesel-fueled construction equipment can be reduced by using the newest available engines and other practices such as idle time restrictions and appropriate engine maintenance, similar to those recommended for the PPEC construction phase.

The reconductoring and undergrounding emissions would likely comply with applicable LORS, and the emissions would not likely cause or contribute to a violation of the ambient air quality standards or otherwise result in a potential for a significant air quality impact. Therefore, the reconductoring and undergrounding activities would not be expected to result in air quality impacts greater than those analyzed in the staff assessment as long as all construction conditions of certification are incorporated in this work.

3.2 BIOLOGICAL RESOURCES

Environmental Setting

The applicant conducted a review of aerial photographs, a site visit on October 21, 2011, and a search of known or potential species occurrences using online database information. The online search included the County of San Diego Multiple Species Conservation Program (MSCP), California Department of Fish and Game's (CDFG) California Natural Diversity Database (CNDDB 2011), a species list provided by the Carlsbad office of U.S. Fish and Wildlife Service (USFWS), the USFWS Critical Habitat Mapper, and a search of the California Native Plant Society rare plant database (CNPS 2011). The accuracy of the information provided was independently verified by Energy Commission staff

Existing Vegetation Communities and Common Wildlife

Disturbed/Developed

Disturbed and developed are the most common cover types in the project area. Disturbed (ruderal) plant communities occur along both project corridors in areas of high disturbance, including along roadways and other developments. Characteristic plants include species that thrive in disturbed areas, such as annual grasses and weedy herbs. Developed lands occur along both project corridors, including substations, industrial development, commercial development, and residential development.

Due to high levels of repeated disturbance, disturbed/developed habitat along the proposed project corridor is low-quality wildlife habitat. However, raptors including the red-tailed hawk (*Buteo jamaicensis*) may forage within these areas for small mammals.

Ornamental/Landscaped

Ornamental and landscaped areas occur along both project corridors and consists of landscaping that includes non-native plants such as annual grasses, forbs, shrubs, and trees.

Mature trees within this vegetation community provide suitable nesting habitat for birds including the red-tailed hawk and Anna's hummingbird (*Calypte anna*).

Coastal sage scrub

Coastal sage scrub vegetation occurs along the Friars – Doublet Tap 138-kV transmission line corridor in fragmented but relatively undisturbed patches and is surrounded by dense urban development. The patches are characterized by mature, native vegetation which may support a variety of common and special-status bird, mammal, reptile, and amphibian species. There are also small patches of this vegetation community along the Escondido – Palomar 230-kV transmission line. Characteristic plant species of coastal sage scrub include California sagebrush (*Artemisia californica*), buckwheat (*Eriogonum* spp.), California lilac (*Ceanothus* spp.), manzanita (*Arctostaphylos* spp.), monkeyflower (*Mimulus* spp.), sage (*Salvia* spp.), gooseberry and currant (*Ribes* spp.), and coyote brush (*Baccharis* sp.).

Coastal sage scrub in the project area provides foraging habitat for red-tailed hawk as well as suitable breeding habitat for shrub-nesting birds such as coastal California gnatcatcher (*Sturnella neglecta*) and sage sparrow (*Amphispiza belli*). Common mammals include Audubon's cottontail (*Sylvilagus audubonii*), California ground squirrel (*Spermophilus beecheyi*), and Botta's pocket gopher (*Thomomys bottae*). Rodent burrows in coastal sage scrub provide essential refuge sites (hibernacula) for amphibians and reptiles.

Potentially Jurisdictional Wetlands and Waters

Special aquatic resource areas were identified within the project area by PPEC biologists however a wetland delineation was not performed. These aquatic resources within the project area, which may include seasonal wetlands, are potentially under the jurisdiction of U.S. Army Corps of Engineers (USACE) and/or California Department of

Fish and Game (CDFG) and Regional Water Quality Control Board (RWQCB) as wetlands and waters of the U.S. and/or state.

Seasonal wetland

Seasonal wetlands are depression areas which may have indicators of all three wetland parameters (i.e., hydrophytic vegetation, hydric soils, and wetland hydrology) during the wetter portion of the growing season, but usually lack wetland indicators of hydrology and/or vegetation during the drier portion of the growing season (Environmental Laboratory 1987). These wetlands may be present in the special aquatic resource features identified along both transmission line corridors and may be jurisdictional waters of the U.S. and/or State.

Seasonal wetlands may support a variety of wildlife typically adapted to aquatic conditions, including frogs, toads, and salamanders. During the spring and summer, dense stands of emergent vegetation will support foraging and breeding habitat for resident and migratory birds, including red-wing blackbirds (*Agelaius phoeniceus*).

Special-Status Species

Special-status species include those listed as threatened or endangered under the federal or state endangered species acts, species proposed for state or federal listing, California species of special concern, and other species that have been identified by the USFWS, CDFG, or other agency as unique or rare, as well as species included on the CNPS list of rare, threatened, or endangered plants in California. **Table 1** (below) identifies the special-status species that could potentially occur within the project corridors. The determination of the potential for occurrence for each species has been provided by the PPEC applicant (PPEC 2011t). Focused biological surveys have not been conducted for this project. Subsequent environmental review conducted pursuant to CEQA as well as consultation under the federal and California Endangered Species acts will necessitate protocol-level surveys prior to construction for the western burrowing owl, coastal California gnatcatcher, least Bell's vireo, as well as wetland delineations, rare plant surveys, and other focused field surveys. It is likely that additional species will be considered as a part of the subsequent CEQA analysis for this project.

Table 1
Special-status Species Potentially Occurring in the PPEC Transmission Line Upgrade Study Area

Scientific Name	Status	Habitat
Plants		
San Diego thorn-mint *Acanthomintha ilicifolia*	FT, CE, CNPS 1B.1, G2/S2,	Openings in chaparral, coastal scrub, valley and foothill grassland, vernal pools in clay soils.Occurs from 65 to 1,361 feet in elevation. Blooms April–June.
California adolphia *Adolphia californica*	CNPS 2.1, G3G4/S2	Chaparral, coastal scrub, and valley and foothill grassland in clay soils. Occurs from 147 to 2, 427 feet in elevation. Blooms December–May.

Scientific Name	Status	Habitat
San Diego ambrosia *Ambrosia pumila*	FE, CNPS 1B.1, G1/S1.1	Chaparral, coastal scrub, valley and foothill grassland, and vernal pools in sandy loam or clay, often in disturbed areas, sometimes alkaline soils. Occurs from 65 to 1,361 feet in elevation. Blooms April–October.
Davidson's saltscale (*Atriplex serenana var. davidsonii*)	CNPS 1B.2, G5T2?/S2?	Coastal bluff scrub, coastal dunes, coastal scrub, and playas. Occurs from sea level to 460 feet in elevation. Blooms March–October.
San Diego goldenstar (*Bloomeria clevelandii*)	CNPS 1B.1, G2/S2, MSCP[1]	Chaparral, coastal scrub, valley and foothill grassland, and vernal pools. Found in mesa grasslands, scrub edges, clay soils often on mounds between vernal pools in fine, sandy loam. Occurs from 164 to 1,510 feet in elevation. Blooms April–May.
thread-leaved brodiaea (*Brodiaea filifolia*)	FT, CE, CNPS 1B.1, G2/S2.1, MSCP	Chaparral (openings), cismontane woodland, coastal scrub, playas, valley and foothill grassland, vernal pools often in clay soils. Occurs from 65 to 3,674 feet in elevation. Blooms March–June.
Orcutt's brodiaea (*Brodiaea orcuttii*)	CNPS 1B.1, G1/S1, MSCP	Mesic, clay, sometimes serpentinite soils inclosed-cone coniferous forest, chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland, and vernal pools. Occurs from 100 to 5,500 feet in elevation. Blooms May–July.
wart-stemmed ceanothus (*Ceanothus verrucosus*)	CNPS 2.2, G3/S2.2, MSCP	Chaparral from sea level to 1,247 feet in elevation. Blooms December–May.
southern tarplant (*Centromadia parryi ssp. australis*)	CNPS 1B.1, G4T2/S2	Margins of marshes and swamps, vernally mesic areas in valley and foothill grassland, and vernal pools. Occurs from sea level to 1,394 feet in elevation. Blooms May–November.
smooth tarplant (*Centromadia parryi ssp. australis*)	CNPS 1B.1, G3G4T2/S2.1	Chenopod scrub, meadows and seeps, playas, riparian woodland, valley and foothill grassland in alkaline soils. Occurs from sea level to 2,100 feet in elevation. Blooms April–September.
long-spined spineflower *Chorizanthe polygonoides*	CNPS 1B.1, G5T3/S3	Chaparral, coastal scrub, meadows and seeps, valley and foothill grassland, vernal pools often in clay soils. Occurs from 100 to 5,500 feet in elevation. Blooms May–July.

Scientific Name	Status	Habitat
western dichondra (*Dichondra occidentalis*)	CNPS 4.2, G4?/S3.2	Chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland. Occurs from 164 to 1,640 feet in elevation. Blooms January–July.
variegated dudleya (*Dudleya variegate*)	CNPS 1B.2, G2/S2.2	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland, and vernal pools/clay soils. Occurs from 10 to 1,900 feet in elevation. Blooms April–June.
Palmer's goldenbush (*Ericameria palmeri var. palmeri*)	CNPS 1B.1, G4T2T3/S1	Mesic areas in chaparral and coastal scrub. Occurs from 98 to 1,968 feet in elevation. Blooms July–November.
San Diego button-celery (*Eryngium aristulatm var. parishii*)	FE, SE, CNPS 1B.1, G5T2/S2.1, MSCP	Mesic soils in coastal scrub, valley and foothill grassland, and vernal pools. Occurs from 66 to 2,035 feet in elevation. Blooms April–June.
San Diego barrel cactus (*Ferocactus viridescens*)	CNPS 2.1, G4/S2, MSCP	Chaparral, coastal scrub, valley and foothill grassland, and vernal pools. Occurs from 10 to 1,500 feet in elevation. Blooms May–June.
Palmer’s grapplinghook (*Harpagonella palmeri*)	CNPS 4.2, G4/S3.2	Chaparral, coastal scrub, and valley and foothill grassland/clay. Occurs from 66 to 3,130 feet in elevation. Blooms Mar–May.
beach goldenaster (*Heterotheca sessiliflora* ssp. *sessiliflora*)	CNPS 1B.1, G4T2T3/S2.1?	Sandy areas within coastal dunes, coastal scrub, and coastal chaparral. Occurs from sea level to 4,015 feet in elevation. Blooms March–December.
graceful tarplant (*Holocarpha virgata ssp. elongate*)	CNPS 4.2, G5T3/S3.2	Chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland. Occurs from 196 to 3,608 feet in elevation. Blooms May–November.
San Diego marsh-elder (*Iva hayesiana*)	List 2.2, S2.2?, G3?	Marshes, swamps, and playas. Occurs from 33 to 1,640 feet in elevation. Blooms April–October.
Coulter's goldfields (*Lasthenia glabrata ssp. coulteri*)	CNPS 1B.1, G4T3/S2.1	Coastal salt marshes, playas, valley and grassland, and vernal pools. Occurs from sea level to 4,592 feet in elevation. Blooms February–June.

Scientific Name	Status	Habitat
Robinson's pepper-grass (*Lepidium virginicum* var. *robinsonii*)	CNPS 1B.2, G5T2?/S2.2	Chaparral and coastal scrub. Occurs from sea level to 2,900 feet in elevation. Blooms January–July.
light gray lichen (*Mobergia calculiformis*)	G1/S1.1	Found on acidic rocks and basalt from southern California, Guadalupe Island, Baja California, Baja California Sur, above ocean cliffs up to 1,312 feet in elevation.
coast woolly-heads (*Nemacaulis denudata var. denudate*)	CNPS 1B.2, G3G4T3?/S2.2	Sandy areas within coastal dunes from sea level to 328 feet in elevation. Blooms April–September.
California Orcutt grass *Orcuttia californica var. californica*	FE, CE, CNPS 1B.1, G2/S2.1	Vernal pools from 49 to 2,132 feet in elevation. Blooms April–August.
Brand's star phacelia (*Phacelia stellaris*)	FC, CNPS 1B.1, G2?/S1	Coastal scrub and coastal dunes from sea level to 4,969 feet in elevation. Blooms March–June.
San Diego mesa mint (*Pogogyne abramsii*)	FE, SE, CNPS 1B.1, G2/S2.1, MSCP	Vernal Pools. Occurs from 295 to 656 feet in elevation. Blooms March–July.
Otay Mesa mint (*Pogogyne nudiuscula*)	FE, SE, CNPS 1B.1, G1/S1.1, MSCP	Vernal pools from 295 to 820 feet in elevation. Blooms May–July.
Engelmann oak (*Quercus engelmannii*)	CNPS 4.2, G3/S3.2	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland. Occurs from 164 to 4,265. Blooms March–June.
Nuttall's scrub oak (*Quercus dumosa*)	CNPS 1B.1, G1G2/S1.1	Closed-cone coniferous forest, chaparral, and coastal scrub in sandy, clay loam soils. Found from 49 to 1,312. Blooms February–August.
chaparral ragwort (*Senecio aphanactis*)	CNPS 2.2, G3?/S1.2, MSCP	Coastal scrub and cismontane woodlands on drying alkali flats. Occurs from 66 to 1,886 feet in elevation. Blooms January–April.
purple stemodia (*Stemodia durantifolia*)	CNPS 2.1, G5/S2.1?	Sonoran desert scrub (often mesic, sandy soils). Occurs from 590 to 984 feet in elevation. Blooms January–December.
oil neststraw (*Stylocline citroleum*)	CNPS 1B.1, G2/S2	Chenopod scrub and coastal scrub in clay soils. Occurs from 164 to 984 feet in elevation. Blooms March–April.

Scientific Name	Status	Habitat
estuary seablite (*Suaeda esteroa*)	CNPS 1B.2, G3/S2	Coastal salt marshes in clay, silt, or sand substrates. Occurs from sea level to 16 feet in elevation. Blooms May–October.
rush-like bristleweed (*Xanthisma junceum*)	CNPS 4.3, G5/S3.3	Chaparral or coastal scrub. Occurs from 787 to 3,280 feet in elevation. Blooms June–January.
Wildlife		
Reptiles and Amphibians		
orange-throated whiptail (*Aspidoscelis tigris stejnegeri*)	SSC, S2, G5, MSCP[1]	Washes, streams, terraces, and other sandy areas, often where there are rocks and patches of brush and rocky hillsides in coastal chaparral, thorn scrub, and streamside growth.
western spadefoot (*Spea hammondii*)	SSC, G3/S3	Occurs primarily in grasslands; occasional populations occur in valley foothill hardwood woodlands. Ranges throughout the Central Valley and adjacent foothills; usually common where it occurs. Found from near sea level to 4,470 feet in elevation.
Mammals		
Mexican long-tongued bat (*Choeronycteris mexicana*)	SSC, G4/S1, WBWG-M	Occasionally found in San Diego County, which is the extent of their range. Feeds on nectar and pollen of night blooming succulents. Roosts in relatively well-lit caves and in and around buildings.
pocketed free-tailed bat **(***Nyctinomops femorosaccus*)	SSC, G4/S2S3, WBWG-M	Found near large, open water sources in a variety of habitats, including desert shrub and pine-oak forest. Roosts in colonies in crevices of rugged cliffs, high rocky outcrops, slopes, and buildings.
Birds		
western burrowing owl (*Athene cunicularia*)	SSC, S2, G4, MSCP, BCC	Rodent burrows in sparse grassland, desert, and agricultural habitats.
coastal California gnatcatcher (*Polioptila californica californica*)	FT, SSC, G3T2/S2, MSCP	Obligate resident of arid coastal sage scrub vegetation on mesas, hillsides and in washes. Nests almost exclusively in California sagebrush.
least Bell's Vireo (*Vireo bellii pusillus*)	FE, SE, G5T2 S2, MSCP[2]	Low riparian areas close to the water or dry riverbeds. Nests are usually constructed in bushes or within the branches of mesquite (*Prosopis* spp.), willows, and mule fat. Found below 2,000 feet in elevation.

Sources: (CNDDB 2011, USFWS 2011, CDFG 2011, PPEC 2011t)

FederalFC = Federal Candidate for federal listing

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://library.fws.gov/bird_publications/bcc2008.pdf >

State SSC = California Species of Special Concern: species of concern to CDFG because of declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction.
CFP = California Fully Protected
SE = State-listed as Endangered
ST = State-listed as Threatened
SCE = State candidate for listing as Endangered
Rare = State listed as rare
WL = State watch list

Western Bat Working Group

WBWG-H = High Priority are imperiled or are at high risk of imperilment based on available information on distribution, status, ecology and known threats.
WBWG-M = Medium Priority medium risk of imperilment based on available information on distribution, status, ecology and known threats.

California Native Plant Society (CNPS) California Rare Plant Rank (Plants only)

CNPS =
List 1B = Rare, threatened, or endangered in California and elsewhere
List 2 = Rare, threatened, or endangered in California but more common elsewhere
List 3 = Plants which need more information
List 4 = Limited distribution – a watch list
0.1 = Seriously threatened in California (high degree/immediacy of threat)
0.2 = Fairly threatened in California (moderate degree/immediacy of threat)
0.3 = Not very threatened in California (low degree/immediacy of threats or no current threats known)

Local MSCP = City and County of San Diego Multiple Species Conservation Plan covered species
MSCP[1] = County of San Diego Multiple Species Conservation Plan covered species
MSCP[2] = City of San Diego Multiple Species Conservation Plan covered species

Global Rank/State Rank (Included for plants only**)**

Global rank (G-rank) and State rank (S-rank) is a reflection of the overall condition of an element throughout its global (or State) range. Subspecies are denoted by a T-Rank; multiple rankings indicate a range of values. State rank (S-rank) is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank. An H-rank indicates that all sites are historical.

G1 or S1 = Critically imperiled; Less than 6 viable element occurrences (EOs) OR less than 1,000 individuals
G2 or S2 = Imperiled; 6-20 EOs OR 1,000-3,000 individuals
G3 or S3 = Rare, uncommon or threatened, but not immediately imperiled; 21-100 EOs OR 3,000-10,000 individuals
G4 or S4 = Not rare and apparently secure, but with cause for long-term concern; this rank is clearly lower than G3 but factors exist to cause some concern; i.e., there is some threat, or somewhat narrow habitat.
G5 or S5 = Demonstrably widespread, abundant, and secure.

Q = Questionable taxonomy that may reduce conservation priority.
H = Possibly extinct
? = Inexact numeric rank

Threat Ranks
T/.1 = very threatened
T/.2 = threatened
T/.3 = no current threats known

Potential Impacts of Proposed Downstream Upgrades

The analysis of potential impacts has been provided by the PPEC applicant (PPEC 2011t) and verified by staff. Further surveys and impact analysis would need to be conducted as part of the CPUC environmental analysis prior to licensing this transmission line upgrade project.

Reconductoring would require both excavation and above-ground work. It would also require construction equipment access, potentially across drainages and through special-status species habitat. In addition, construction of this project would require temporary staging areas for equipment and materials. These activities could affect habitat and biological resources in the project corridor.

Potential Impacts to Special-Status Plant Species

Rare plant surveys during the appropriate blooming period would be required to identify the distribution of potentially affected special-status plants. If present on the project site or in the vicinity, direct and indirect impacts could occur from project construction. Direct impacts could occur if plants are crushed by construction equipment and vehicle or foot traffic, or if they are present in the staging and laydown area. Indirect impacts could occur to species associated with wetlands or drainages if water quality in drainages is adversely affected during project construction. In addition, construction activities have the potential to indirectly affect adjacent vegetation communities by facilitating the transport and dispersal of invasive weed propagules, thereby potentially introducing new weeds and exacerbating invasions already present in the project vicinity.

Special-status plant surveys would be required to complete an adequate environmental review. If special-status plants are found to occur within the project area and cannot be avoided, then consultation with the appropriate agency (San Diego MSCP, CDFG, and/or USFWS) would be needed to identify appropriate mitigation measures. In lieu of state or federal consultation for listed species, impacts may be covered under the City and/or County of San Diego MSCP.

Potential Impacts to Special-Status Wildlife Species

There is potential for several special-status wildlife species to occur in the project corridors, including those listed in Table 1. In addition, breeding birds protected under the Migratory Bird Treaty Act are likely to be present within the proposed project area. Protocol-level or other focused surveys must be completed to identify the distribution of potentially affected special-status wildlife in the project area.

Potential impacts to special-status wildlife include direct mortality from encounters with construction equipment, burrow/nest destruction during equipment staging, entombing

adults, eggs, or young, and disruption or harassment. In addition, short and long-term habitat loss, modification, and fragmentation, as well as the potential spread of noxious weeds could decrease local and regional wildlife habitat values.

Consultation with resource agencies (San Diego MSCP, USFWS, and/or CDFG) would be required to identify appropriate impact avoidance, minimization, and mitigation measures and ensure compliance with the federal and California Endangered Species Acts.

Impacts to Sensitive Habitats

Direct impacts to potentially jurisdictional waters could occur if construction equipment is staged in or crosses project area drainages. The drainages that occur within the project area may be regulated by the CDFG under Fish and Game Code, the Regional Water Quality Control Board, and potentially the USACE under the federal Clean Water Act. A wetland delineation would provide sufficient information to further assess potential impacts to jurisdictional wetlands and waters. If warranted, acquisition of a Lake and Streambed Alteration Agreement (Section 1602 permit), Water Quality Certification (Section 401 permit), and USACE Section 404 permit as well as implementation of the measures within these permits and agreements would ensure that potential impacts to sensitive habitats are mitigated and compliance with applicable laws, ordinances, regulations, and standards (LORS) is achieved.

Impact Minimization Measures

Agency consultation would identify appropriate measures to avoid, minimize, and mitigate potential impacts to species listed under the federal and/or California Endangered Species acts (e.g., coastal California gnatcatcher, least Bell's vireo) and sensitive habitats (e.g., jurisdictional waters), as described above. If special-status species or sensitive habitats are identified within the project area, limited construction periods, no-disturbance buffers, passive relocation, artificial burrow construction, revegetation plans, and habitat compensation may be required to avoid, minimize, or mitigate impacts to special-status species and sensitive habitats.

To minimize impacts to nesting birds, pre-construction surveys would need to be conducted and no-disturbance buffers established if project activities occur during the nesting season (typically February 1 through August 30). At all times of the year, noise generating activities should be limited during early morning and evening to avoid impacts to birds protected under the Migratory Bird Treaty Act.

In addition, standard measures and best management practices recommended to minimize impacts to biological resources include but are not limited to:

- Designate a lead biologist to be on-site during construction activities to supervise, conduct and coordinate mitigation, monitoring, and other biological resource compliance efforts.
- Develop and implement a Worker Environmental Awareness Program to inform and educate workers prior to site mobilization about sensitive biological resources associated with the project.

- Conduct preconstruction special-status species surveys.
- Utilize existing access roads and previously disturbed areas for staging/equipment storage, where feasible.
- Establish equipment fueling, maintenance and staging controls.
- Limit disturbance area by erecting temporary exclusion fencing to keep workers out of sensitive habitat and within designated work areas.
- Minimize traffic collisions with wildlife.
- Avoid use of toxic substances and minimize spills of hazardous materials.
- Minimize lighting impacts.
- Avoid wildlife pitfalls and entrapment by covering trenches, bores, and other excavations at the end of the work day.
- Establish worker guidelines including pet control as well as trash containment, disposal, and removal.
- Avoid spread of noxious weeds and reestablish native vegetation quickly in temporarily disturbed areas.
- Implement erosion control measures and conduct construction activities during dry summer months.

Required Permits and Authorizations

LORS compliance for the project may require acquisition of some or all of the permits/authorizations listed in **Table 2**.

Table 2. Responsible Agencies and Required Permits

Responsible Agency	Permit/Authorization
U.S. Army Corps of Engineers	Preconstruction Notification for Nationwide Permit (Section 404) may be required for impacts to waters of the U.S. including wetlands
U.S. Fish and Wildlife Service	Consultation with USFWS under section 7 or 10 of the federal Endangered Species Act may be required for impacts to federally-listed species resulting in issuance of a Biological Opinion or determination of “No Effect”
California Department of Fish and Game	Section 1602 Streambed Alteration Agreement of the CDFG Code may be required for impacts to waters of the state, including associated riparian vegetation
California Department of Fish and Game	California Endangered Species Act Section 2081 Incidental Take Permit (or Consistency Determination with federal Biological Opinion) may be required for impacts to State-listed species

Responsible Agency	Permit/Authorization
San Diego Regional Water Quality Control Board	Section 401 Water Quality Certification and Porter–Cologne waste discharge requirements may be required for impacts to wetlands and waters of the U.S. and state
City and/or County of San Diego Multiple Species Conservation Program (MSCP)	In lieu of state or federal permits, impacts to state and federally listed species may be permitted under the MSCP

Conclusion

Sensitive biological resources, including special-status species and jurisdictional waters, potentially occur within and adjacent to the reconductoring area. Additional surveys, including protocol surveys and a wetland delineation, may be required to determine the occurrence and distribution of these potentially affected biological resources and assess impacts. Potential direct and indirect impacts to biological resources may be avoided, minimized, or mitigated, as necessary with implementation of standard and project-specific measures. Consultation with City and/or County of San Diego MSCP, USFWS, CDFG, and USACE would be necessary to identify appropriate measures. In addition, permits would likely be required from these agencies to demonstrate compliance with the federal and California Endangered Species acts as well as the federal Clean Water Act and Fish and Game Code. If compliance with all applicable LORS is achieved and impact avoidance, minimization, and mitigation measures are implemented as recommended by the resource agencies, the construction and operation of the proposed reconductoring project is not likely to result in significant, unmitigated impacts to biological resources. However, this will ultimately be determined through subsequent environmental review conducted by the CPUC pursuant to CEQA.

3.3 CULTURAL RESOURCES

Study Methods

If cultural resources, including structures more than 45 years old, might be affected by the reconductoring and/or undergrounding activities, they would need to be evaluated for significance, generally determined by eligibility for listing on the California Register of Historical Resources (CRHR). As part of the effort to identify cultural resources within the area proposed for the reconductoring work, the project applicant conducted a cultural resources investigation, which consisted of a background literature review; consultation with local Native American representatives; consultation with local planning jurisdictions and historic preservation interest groups/organizations; and a pedestrian archaeological and built-environment field survey of the project area of analysis (PPEC 2011y).

California Historical Resources Information System - Literature Research

The applicant commissioned a literature search from the staff of the South Coastal Information Center (SCIC) of the California Historical Resources Information System (CHRIS) on October 24, 2011 (PPEC 2011y, p. 4). In accordance with the California Energy Commission's *Rules of Practice and Procedure & Power Plant Site Certification Regulations* for assessing potential impacts to archaeological and built-environment

resources, the literature search area was defined by a one-quarter mile buffer zone on either side of the segments of the two transmission line corridors (half-mile-wide corridor in total). The literature research at the SCIC included a review of all previously recorded archaeological sites and built-environment resources, as well as all previous cultural resource investigation reports, within the designated search area.

The SCIC literature search revealed that 49 previous cultural resources investigations have been conducted within a one-quarter mile radius of the two transmission line corridors segments (PPEC 2011y, pp. 4 – 14). Eleven of these investigations include portions of the two transmission line corridor segments (eight within the Friars-Doublet Tap 138kV transmission line corridor, and three within the Escondido-Palomar 230 kV transmission line corridor). According to the SCIC report, 17 cultural resources had been previously recorded within the one-quarter-mile literature search radius (PPEC 2011y, p. 14 – 16). Two of the 17 previously recorded resources were identified within the direct project area of the Friars-Doublet Tap 138kV transmission line corridor segment (**CA-SDI-4**, and **CA-SDI-11767**).

Additional Background Literature Research

Additional background research conducted by the applicant involved general primary, secondary, and site-specific research at the following facilities: the San Diego History Center; San Diego State University Library; University of California, San Diego Geisel Library and Mandeville Special Collections; San Diego Public Library; City of Escondido; Escondido Library Pioneer Museum; and a number of online resources (e.g., Calisphere – A World of Digital Resources, California Historic Topographic Map Collection). In addition, historic period aerial photographs of the project area were reviewed for select years between 1953 and 2005. This research involved the review of historic maps and photographs, newspaper articles, general histories, journal articles, and other relevant data.

Public Participation/Historic Preservation Organizations

In an effort to identify historic-era cultural resources that may occur within the project area, the applicant contacted local planning jurisdictions and local historic preservation interest groups on November 8, 2011, including the County of San Diego Department of Planning and Land Use; the City of San Diego Planning Department; the City of Escondido Planning Division; the Escondido History Center; the San Diego History Center; and the Save Our Heritage Organisation (SOHO). To date, the applicant has received responses from the City of Escondido and the City of San Diego, indicating that they are unable to provide any information regarding the presence of cultural resources within the project area (PPEC 2011y, p. 3, and Appendix C).

Native American Consultation

As part of the effort to identify sensitive Native American cultural resources within the proposed project area of analysis, the applicant sought input from local Native American representatives regarding their knowledge of or concerns for Native American cultural resources that may be affected by the proposed reconductoring work (PPEC 2011y, p. 16). The applicant contacted the California Native American Heritage Commission (NAHC) on October 26, 2011 and requested a search of the Sacred Lands File (SLF) database, as well as a list of local Native American representatives who may be

contacted regarding the proposed project. The NAHC responded on November 2, 2011, indicating that the SLF database search failed to identify the presence of Native American cultural resources in the immediate transmission line corridor segments. The NAHC also supplied a list of local Native American representatives who may be contacted regarding the project. On November 4, 2011, the applicant sent letters of inquiry to all individuals/tribal organizations on the list of local Native Americans provided by the NAHC, requesting input regarding the presence of cultural resources or sacred sites within the proposed project area. One response was received from the San Luis Rey Band of Mission Indians requesting copies of all survey reports associated with the study area and indicating that additional input may follow after their review of these reports is complete. The applicant has indicated that coordination with Native American groups on this matter is ongoing (PPEC 2011y, p. 16).

Should the reconductoring project be necessary, staff recommends that the applicant obtain an updated list of Native American representatives from the NAHC and continue to seek input from the Native American representatives regarding potential concerns they may have for heritage resources within the proposed project area.

Archaeological Survey Methods

The archaeological survey area for the proposed transmission line upgrades includes the 1,200-foot-long segment of the Escondido – Palomar 230kV transmission line and the 10,500-foot-long segment of the Friars – Doublet Tap 138 kV transmission line, plus an additional 50-foot buffer on either side of the transmission lines, as well as both the Escondido and Friars substations, which the applicant identifies as the direct area of potential effect (PPEC 2011y, p. 2). The applicant indicated that the project area is primarily located within an urban and suburban environment with limited visibility, due to the built urban environment, and inaccessibility, due to steep topography or private property restrictions. The applicant was also unable to access the Escondido and Friars substations at the time of the survey. The areas surveyed were limited to intermittent sections of both the Friars and Escondido lines. The applicant indicated that approximately 90% of the transmission line along Friars Road is situated behind private multi-family residences on an elevated, steep ridgeline. This section of the transmission line was observed from the public ROW. Approximately 80% of the Escondido transmission line project area was also inaccessible, as a large majority of the transmission lines and related facilities are set back on private parcels. This area was observed from the public ROW at the western terminus of Commercial Street and at intermittent points along Citracado Parkway.

Built-Environment Survey Methods

The built-environment survey area includes both the 1,200-foot-long segment of the Escondido – Palomar 230 kV transmission line and the 10,500-foot-long segment of the Friars – Doublet Tap 138 kV transmission line, as well as the Escondido and Friars substations (PPEC 2011y, p.3). The survey did not consider properties set back from the edge/boundary of their parcel, and large properties were not identified beyond the area reasonably subject to effect by the proposed project. The built-environment survey occurred from public vantage points when portions of the survey area were inaccessible or located on private property. The applicant utilized available information, such as

aerial images, for portions of the project area where views were obstructed (e.g., tree overgrowth or private roads).

Survey Results

Archaeological Survey Results

The archaeological field survey identified no new historic or prehistoric artifacts or sites within the accessible segments of the two transmission line corridors for which upgrades are planned. As described above, the CHRIS literature search resulted in the identification two previously recorded archaeological sites (CA-SDI-4 and CA-SDI-11767) within the project limits (PPEC 2011y, pp. 17 – 24). During the field survey, the applicant found no evidence of either site at their respective recorded locations, as modern developments appeared to have destroyed them both. The northwest cloverleaf access ramp from Friars Road onto State Route 163 is now at the location of CA-SDI-4, and a portion of the Star Dust Golf Course is now at the location of CA-SDI-11767.

Built-Environment Survey Results

The built-environment survey resulted in the identification of one previously unrecorded built-environment property (a segment of the Friars – Doublet Tap 138 kV line constructed in 1957) that meets the age criteria for consideration as a historical resource. The applicant evaluated the property and concluded that it does not appear to be a historical resource for the purposes of CEQA and does not appear to be eligible for the California Register of Historical Resources (CRHR) (PPEC 2011y, pp. 28 – 31). Based on initial research, the applicant found no information indicating that the Friars – Doublet Tap 138 kV line has any association with significant historic events or people (Criteria 1 and 2 of the CRHR), nor did the applicant find that it significantly embodies distinctive characteristics of an architectural style, type, or period, or represent the work of a master (Criterion 3 of the CRHR), or have the potential to yield important information (Criterion 4). In addition, the property does not appear to retain sufficient historic integrity of design, setting, materials, feeling, and association, as many of the frame poles that carry the transmission wires have been upgraded with modern metal legs and have been painted ‘Berkshire Green’ as recently as 1998, which has disrupted the integrity of design, workmanship, and materials. Furthermore, other transmission lines have since been constructed adjacent to the portion of the Friars – Doublet Tap line with non-historic period features, which has disrupted the integrity of feeling, setting, and association in the project area. Based on a review of the information provided by the applicant, staff agrees that the segment of the Friars – Doublet Tap 138 kV Line within the proposed project limits is not a significant historical resource for the purposes of CEQA and does not meet the criteria for inclusion in the CRHR.

Impacts of Reconductoring

According to the applicant (PPEC 2011x, pp. 2-2 – 2-5), the following construction methods would be used to complete the proposed transmission facility upgrades.

Reconductoring of Lines #1 and #2 of the Escondido – Palomar 230-kV facility would require replacement of two cross arms on one transmission pole. No excavation work and no other pole modifications are anticipated at this time. Construction of the two 69-kV sub-transmission lines would involve undergrounding the two lines into one

underground duct bank from the Escondido Substation extending approximately 600 feet south. According to SDG&E, the ductbank would be located within a trench approximately 2.5 feet wide and a minimum of five feet deep. The undergrounding effort would also involve the removal of two existing poles. The Friars – Doublet Tap 138-kV line upgrades would involve reconductoring of approximately 10,500 feet of the existing line; however, based on the applicant's consultation with SDG&E, no modifications to the existing poles are anticipated.

The project upgrades would be constructed using historic stringing sites within existing easements and no new access roads are anticipated. Helicopters may be used to string the lines to avoid disturbance to sensitive resources or in areas where the terrain makes access difficult. The proposed upgrades would also include replacing several substation components associated with the transmission and sub-transmission line disconnects and getaways. All substation work (i.e., at the Escondido and Friars substations) would take place above ground and inside the existing substation fence line. No below-grade work is required that would disturb any soil.

Temporary construction areas (approximately 2 to 5 acres) would include material storage and laydown areas, temporary construction yards, and helicopter landing areas. These areas would be selected by engineering and construction personnel during the design phase and are anticipated to be located on SDG&E-owned properties at the substations and along the transmission line routes. Work crews will have a great deal of flexibility in choosing the locations of the pull and tension sites and temporary staging areas and can generally select sites that avoid many environmental impacts.

The cultural resource investigation conducted for the proposed reconductoring project revealed no important prehistoric or historic cultural resources within the project limits. Based on the overall urban/developed and previously disturbed nature of the reconductor project area, as well as the lack of resources identified during the cultural resource survey, it appears unlikely that disturbances to cultural resources would occur as a result of the reconductor project. Nevertheless, as indicated in the cultural resources technical report (PPEC 2011y), not all portions of the project area were accessible for the pedestrian survey, so there may be a potential for the discovery of new cultural resources once the surveys for those areas are completed. In addition, it is also possible that ground disturbing construction activities could encounter as-yet-unknown buried archaeological elements. For this reason, staff recommends that the proposed project, if implemented, should include measures for the completion of the cultural resources field survey, as well as measures to mitigate any potential adverse impacts, if significant buried cultural materials are unearthed during construction.

Should the proposed reconductor project area and/or associated staging areas change or expand beyond what has currently been investigated for cultural resources, as described here, further studies, including literature research, pedestrian field survey, and outreach to Native Americans, would be necessary.

Impact Avoidance and Minimization Measures

Although no cultural resources were identified within the surveyed portions of the proposed reconductor project corridor, staff recommends that measures be put in place

to minimize potential impacts to cultural resources in the event that buried cultural resources are encountered during construction. Such measures should include, but not limited to, the following:

1. Completion of the cultural resources field survey by a qualified cultural resources professional for any portions of the project area that have not yet been surveyed.

2. Designation of a qualified on-call Cultural Resources Specialist (CRS) to monitor ground-disturbing activities (if deemed necessary) and investigate any cultural resources discovered during construction.

3. Implementation of a construction worker cultural resources awareness training program, to be conducted by the CRS.

4. Identification of procedures for halting construction in the event of inadvertent discovery of surface or subsurface archaeological deposits or subsurface human remains.

5. Identification of procedures for evaluation of any inadvertent archaeological discovery by the designated CRS.

6. Identification of procedures for the mitigation of adverse impacts on any inadvertent archaeological discovery determined to be significant.

Should any human remains be discovered during construction, project officials should contact the designated CRS immediately, and are required by the California Health and Safety Code (Section 7050.5) to contact the San Diego County coroner. If the Coroner determines that the find is Native American, he or she must contact the NAHC. The NAHC, as required by Public Resources Code (Section 5097.98), would then determine and notify the Most Likely Descendant (MLD), tendering a formal request to inspect the remains and make appropriate recommendations regarding the disposition of the remains.

Details for these and any other additional measures should be arranged prior to the proposed reconductoring work and the necessary information disseminated to the appropriate project manager(s) and/or field supervisor(s), prior to the commencement of construction operations for the proposed reconductor project.

Conclusion

The applicant has completed a cultural resources investigation of the proposed reconductoring project, including a literature review and a pedestrian field survey (PPEC 2011y). No important cultural resources were identified within the proposed project area as a result of the cultural resources study. Based on the information provided by the applicant regarding proposed reconductoring project, it appears unlikely that the project would encounter as-yet-unknown cultural resources during construction, due to the developed/urban previously-disturbed nature of the project area. In the event that cultural resources are unearthed during construction, staff believes that it would be possible to mitigate any potential impacts to a less-than-significant level through the implementation of avoidance and minimization measures that apply to cultural resources, as outlined above.

3.4 GEOLOGICAL AND PALEONTOLOGICAL RESOURCES

Impacts of Reconductoring

Since no new facilities are anticipated, the identified reconductoring project would not change the impacts of seismic hazards, including but not limited to strong ground shaking, fault rupture and subsidence, on the transmission line above current levels. The potential impacts to geologic and paleontological resources would be limited to temporary construction sites. These sites would not require grading or other disturbance of surface soils, other than construction vehicle disturbance. Since such ground disturbance was anticipated for the original construction, the impacts to geologic and paleontological resources would not be significant. Should new (or replacement) tower foundations be required as part of reconductoring, compliance with applicable laws, ordinances, regulations, and standards (LORS) and conditions adopted by the permitting agency that are similar to the conditions of certification (COCs) contained in this Geology and Paleontology section of this staff assessment would reduce these potential impacts to a less-than-significant level.

A portion of the transmission line upgrade will include underground construction of approximately 600 feet of two 69-kV sub-transmission lines at the Escondido Substation. This underground construction will consist of excavation of a trench 2.5 feet wide and at least 5 feet deep. The geologic map provided in the Transmission System Upgrade Analysis indicates the entire Escondido Substation area is underlain by nonfossiliferous Mesozoic granitic rock. Compliance with conditions adopted by the permitting agency that are similar to the conditions of certification (COCs) contained in this Geology and Paleontology section of this staff assessment would reduce these potential impacts to a less-than-significant level.

Impact Minimization Measures

Although not anticipated, in the event that reconductoring of the transmission line would involve construction of new tower footings or replacement of existing tower footings, the area affected by such construction would need to be evaluated with respect to paleontological resources. For this condition, a paleontologist would periodically examine excavation spoils during reconductoring operations in paleontologically sensitive materials. Any fossil materials found and recovered in native materials might be considered scientifically significant. Transmission line towers represent small areas of disturbance, typically at 500 to 1,500-foot spacing. Compliance with conditions adopted by the permitting agency that are similar to the conditions of certification (COCs) contained in this Geology and Paleontology section of this staff assessment would reduce these potential impacts to a less-than-significant level.

Conclusion

The proposed work would comply with applicable LORS as related to the identified reconductoring project. The existing transmission line was most likely designed and constructed in accordance with seismic requirements of the CBC. Because the reconductoring route has been subjected to previous ground disturbance activities during installation of the existing transmission line, and new ground disturbances are not anticipated, the project would not result in potential significant impacts and would comply with applicable LORS. Because the entire Escondido Substation area is

underlain by nonfossiliferous Mesozoic granitic rock, the subsurface construction would not result in potential significant impacts and would comply with applicable LORS.

3.5 HAZARDOUS MATERIALS AND WORKER SAFETY

HAZARDOUS MATERIALS HANDLING

The hazardous materials use associated with the proposed transmission system upgrades for the Pio Pico Energy Center will require only minimal use of hazardous materials including fuels and lubricants for vehicles used during reconductoring activities. The proposed upgrades do not involve use of any Extremely Hazardous Materials. The upgrade will occur in relatively close proximity to residential areas. However, based on the small amounts of materials and the low risks associated with their use, staff concludes that existing regulations and codes applicable to storage and use of these materials are adequate to reduce the potential for impacts on nearby residents to insignificant levels.

WORKER SAFETY / FIRE PROTECTION

The proposed transmission system upgrades associated with the Pio Pico project would be done by SDG&E. Major utilities such as SDG&E have extensive experience with the types of workplace activities involved with the proposed upgrades. They also are experienced with regulations applicable to worker protection and have extensive worker safety plans and procedures to protect their employees from workplace hazards. Staff concludes that SDG&E will conduct the upgrade activities in compliance with all applicable occupational safety regulations. Staff also concludes that the proposed upgrades would not require significant levels of service from the local fire department and would not result in significant impacts on local fire protection services in the project area.

3.6 LAND USE

Escondido-Palomar Line

The 1,200 foot transmission line segment of the Escondido-Palomar 230-kV line and the 600 foot 69-kV portion would be located within the SDG&E ROW in the western portion of the city of Escondido. The transmission line segment begins at the Escondido Substation located approximately 350 feet south of SR-78/Ronald Packard Parkway and continues to the Palomar Substation. The 69-kV line terminates north of the Palomar Power Project. The proposed transmission line segment is shown in Figure 1 – Escondido-Palomar Upgrades, Aerial View (PPECt 2011). Existing general plan land use categories along the transmission line consist of General Industrial (implementing zoning M2); Light Industrial (implementing zoning M1) and Specific Planning Area[3] (COE 1990). The City of Escondido Zoning Code (Article 26, Section 33-564) permits

[3] A portion of transmission line falls within the Escondido Research and Technology Center Specific Plan adopted November 25, 2002 (Planning Division Case Number 2001-01-SPA) and subsequent Specific Plan Amendment adopted February 8, 2006 (Planning Division Case Number 2005-81-SPA).

Utilities in the M1 and M2 zones. Utilities are also a permitted use within the Escondido Research and Technology Center Specific Plan[4].

Energy Commission staff contacted the city of Escondido regarding the consistency with the existing land use designations for the proposed reconductoring project. City staff stated they have no jurisdiction over the proposed reconductoring project (Bingham 2011). However, SDG&E would be required to obtain an encroachment permit[5] from the city of Escondido (Tunnell 2012).

Friars-Doublet Tap Line

The Friars-Doublet Tap 138-kV line would be located in the city of San Diego and would extend south and west approximately 10,500 feet from the Friars Substation towards the Old Town Substation. The reconductoring, beginning at the Friars Substation, is located approximately 1,600 feet east of State Route 163 and approximately one mile north of Interstate 8. The reconductoring would be located within a 110-foot wide ROW which would run parallel to Friars Road, crossing urbanized development. Approximately one-half of the corridor would be located on SDG&E owned parcels. The proposed transmission line segment is shown in Figure 2 – Friars Doublet Tap 138kV Upgrades, Aerial View (PPECt 2011). Existing land use designations along the transmission line consist of Residential; Commercial Employment, Retail and Services; Multiple Use and Park, Open Space and Recreation (CSD 2010). Transmission lines are considered a utility and not restricted to a specific zone and are an allowed outright use throughout the city of San Diego (Joyce 2012).

Energy Commission staff contacted the city of San Diego regarding the consistency with the existing land use designations for the proposed reconductoring project. City staff stated the proposed reconductoring project would be considered a “replace in kind” and would not be regulated by the city (Joyce 2011).

Impacts of Reconductoring

The reconductoring project would replace transmission conductors within an existing utility corridor. This transmission system upgrade would not involve changing existing or planned land uses in the city of Escondido or the city of San Diego. Several temporary staging areas would be required for the temporary stockpiling of materials and equipment along the transmission utility corridor. These staging areas, approximately one acre in size, would be located within the existing SDG&E transmission line rights-of-way. Although their specific location is not known at this time, it is likely they would be located near each end of the transmission line segments. In addition, temporary construction areas, approximately two to five acres, would be required for material storage and laydown areas, temporary construction yards and helicopter landing areas. Although their specific locations have not been identified they are proposed to be

[4] The transmission lines are within Planning Area 1 (PA1) of the Escondido Research and Technology Center Specific Plan which permits utilities. The transmission lines are also depicted on Exhibit 37 – Major Public Utilities of the Specific Plan.

[5] Per January 3, 2012 email correspondence from Owen Tunnell “The Encroachment Permit has a fairly nominal fee and provides the City with names and numbers for those doing work, and allows the City to review construction issues like insurance, traffic control and hours of work.”

located on SDG&E owned property at the substations along the transmission line routes. (PPEC2011t). Any impacts to land use would be isolated and short term while construction crews reconductor the existing transmission lines. Because the stockpile areas would be temporary and would not displace any existing use, the impact would not be significant.

While the reconductoring activities may disturb nearby residents and businesses, the disturbance would be temporary. In addition, it is also likely that these residents and businesses may have already experienced disturbance associated with maintenance activities along the transmission lines as the lines are existing, versus installing new transmission lines. Temporary structures (i.e. netting) across roadways would be set up along the project route to protect roads and other inhabited areas in the event that a conductor breaks and falls to the ground. Refer to the **Traffic and Transportation** appendices section for a discussion regarding traffic impacts and proposed minimization measures.

Reconductoring would also require access to the existing transmission line rights-of-way by construction vehicles and equipment, which would use existing access roads and utility easements. If overland travel is necessary the applicant may need to secure access rights or an access agreement from the affected property owner. Any additional impacts to land use would be temporary and confined to the work areas. There would be no displacement of any existing land use. Furthermore, since the utility corridors are an established land use and not in the cities' purview, reconductoring of the lines is not expected to conflict with applicable city of Escondido or city of San Diego laws, ordinances, regulations, and standards.

Impact Minimization Measures

To ensure disturbance is minimized to the greatest extent possible, staff recommends the following:

- Landowners adjacent to the transmission utility corridors should be notified of upcoming project activities.
- The transmission utility corridors, construction staging areas and temporary access roads should be restored to pre-project condition once construction is complete.
- Construction staging areas, pull and tension sites and temporary access roads should be sited to reduce or avoid impacts to land uses such as avoiding nearby residences and sensitive uses.
- If any land uses occurring within the transmission utility corridors need to be temporarily closed or have limited access, proper signage should be posted in these areas.
- If overland travel is necessary, access rights or agreements should be secured from the affected property owner(s).

Conclusion

Reconductoring of the Escondido-Palomar 230-kV #1 and #2 lines located in the city of Escondido and the Friars Doublet Tap 138-kV located in the city of San Diego would not

cause a change in land use. Since the reconductoring would be entirely within existing and established rights-of-way, the reconductored transmission lines would not disrupt or divide the physical arrangement of an established community. Also for these reasons, the reconductored transmission lines would not restrict existing or future land uses along the routes. No significant land use impacts would be expected.

3.7 NOISE AND VIBRATION

Environmental Setting

The surrounding land uses along the Escondido-Palomar 230-kV #1 and #2 Lines and 69-kV lines include industrial and power generation, light industrial, commercial, and open space. The primary source of noise in the area is traffic on local roads and industrial uses. No noise-sensitive land uses have been identified along the Escondido-Palomar line upgrade areas. The primary source of noise in the area is traffic on local roads and SR-163. Sensitive uses along the Friars-Doublet Tap 138-kV line include hospital and residential uses.

Reconductoring the two transmission lines and relocating the 69-kV lines underground would require operation of heavy equipment at pull and tensioning sites and during trenching and duct bank construction activities. Heavy equipment operation has the potential to disturb adjacent noise-sensitive land uses during the temporary construction period along the Friars-Doublet Tap 138-kV reconductoring.

Impacts of Reconductoring

Noise would be produced temporarily along the transmission line rights-of-way during reconductoring by construction-type activities. Reconductoring work at each of the pull and tensioning sites would be short term (approximately 3 days at each site). Noise levels would be similar to heavy trucks at maximum engine speed. After the transmission lines are reconductored, there would be no change in existing noise levels in the project area as a result of the operation of the transmission line.

Conclusions

Reconductoring activities are anticipated to take place between 7 a.m. and 5 p.m. on weekdays, and standard noise-reduction devices would be used to reduce equipment noise. Temporary increases in noise levels above existing ambient levels during reconductoring may be noticeable beyond areas immediately adjacent to the rights-of-way; however, they would be temporary and no additional mitigation measures are proposed. Therefore, the reconductoring project would not be likely to cause significant and adverse impacts in terms of noise and vibration.

3.8 SOCIOECONOMICS

The site of the transmission upgrades near the Escondido substation is approximately 40 miles directly north of the PPEC project site in the City of Escondido. The site of the transmission upgrade near the Friars substation is approximately 20 miles directly north of the PPEC project site in the City of San Diego. The construction workforce for the downstream reconductoring and undergrounding of lines would require up to 20 construction workers who would be drawn from existing San Diego Gas and Electric

and contractor workforce in the San Diego area. There would be an ample workforce supply in the San Diego County region to meet the workforce needs. The additional workers would not represent a substantial change from what is presented in the AFC. Construction of the project would not result in a substantial change in local purchases of materials or local construction labor. The project would not result in potential impacts or benefits substantially greater than those analyzed in the staff assessment and would comply with applicable LORS. Therefore, any potential socioeconomic impacts would be less than significant.

3.9 SOIL AND WATER RESOURCES

Impacts of Transmission System Upgrade

The main impact to soils would be related to soil disturbance due to underground relocations of the two overhead 69-kV lines. Although these account for only 600 feet compared to the total 2.2 miles of line reconductoring the undergroundings require earthwork activities including the removal of two existing poles and the excavation of a trench approximately 2.5 feet wide and a minimum of 5 feet deep. Reconductoring, as well as substation equipment replacement, does not require any excavation work but activities by construction vehicles and equipment would cause soil disturbance and compaction.

Additional soil disturbance would occur during vegetation clearing and trimming at the reconductoring pull and tension sites. To set up for equipment and materials, staging areas about one acre in size would be set up at each end of the transmission line segments. Soil disturbance and compaction could result in a short-term increase in wind and water erosion until work areas are stabilized. Soil compaction could also impact the reestablishment of vegetation along the route. Hazardous materials utilized during construction could also be released accidently, resulting in impacts to soils.

In work areas that are away from drainage channels and potentially jurisdictional wetlands and waters[6], impacts to water resources are expected to be limited. However, in work adjacent to these areas, the potential for water resource impacts are more significant. Impacts to water resources would be related to soil erosion due to vegetation clearing and soil disturbance and, to a lesser extent, increased runoff due to soil compaction. Release of hazardous materials during construction could also cause water quality impacts.

Impact Avoidance and Minimization Measures

During construction, implementation of erosion and dust control best management practices (BMPs) as outlined in a Stormwater Pollution Prevention Plan (SWPPP) specific for the transmission system upgrade by SDG&E would limit impacts to soil and water resources associated with erosion. Standard BMPs including the use of filter fences or straw bales to trap eroded sediments, could prevent release offsite. Special consideration would be required for any work adjacent to existing drainage channels or other water resources. Dust control through watering would limit wind erosion impacts.

[6] Potentially under the jurisdiction of U.S. Army Corps of Engineers (USACE) and/or California Department of Fish and Game (CDFG) and Regional Water Quality Control Board (RWQCB) as wetlands and waters of the U.S. and/or state.

Over-compacted soils could be reconditioned through ripping or tilling, and disturbed soils could be revegetated through hydroseeding. Implementation of the SWPPP would also included BMPs for hazardous materials handling during construction to limit the potential for impacts to soils and water resources. Portable toilets would be supplied by a licensed contractor for collection and disposal of sanitary wastes during the construction period.

Conclusion

Overall, the construction impacts to soils along the project corridor are not expected to be significant. With implementation of the appropriate BMPs, potential impacts to soil and water would be less than significant. The project is not expected to result in significant impacts, and would comply with the applicable LORS. Water for dust suppression would be minimal and is not anticipated to create impacts on either groundwater or stormwater. Dust suppression would be temporary and construction related. Any potential impacts to water resources impacts would be less than significant through implementation of BMPs as outlined in a project specific SWPPP.

3.10 TRANSMISSION LINE SAFETY AND NUISANCE

Impacts of Reconductoring

As noted in staff's testimony in the Preliminary Staff Assessment (PSA), the new, project-related electric and magnetic fields would be introduced into the area along the line corridor running between the proposed PPEC and the existing 230-kV SDG&E Otay Mesa switchyard to be interconnected. It is the expected levels of these generated fields that are specified for measurement in the related condition of certification (TLSN-2) in the testimony. Maximum levels would be encountered within the 80-foot right-of-way (ROW) specified for the two candidate lines. For either line, placement within this right-of-way would ensure location away from areas of human habitation. The level of corona and the other electric field-related impacts depends on line voltage and not the level of power flowing in the line. Since the reconductored downstream segment would be operated at the same 230-kV as the new segment from PPEC to the Otay Mesa switchyard, such reconductoring would not affect the corona and other electric field impacts currently around this downstream segment. The only field component to be affected by PPEC operation would be the magnetic field whose magnitude depends on current level. The project-related increase in system current would thus increase the operational-phase magnetic fields in the downstream segment. Since both the candidate PPEC routes and the routes of the downstream upgrade segment are located away from area residences, the long-term residential magnetic field exposures of past health concerns would not occur.

Following a decision from 1993 (D.93-11-013) that was reaffirmed on January 27, 2006 (D.06-01-042), the CPUC required utilities to incorporate "low-cost" or "no-cost" field reduction measures in the design of their system power lines and related facilities. Since the proposed PPEC line design and intended downstream upgrades would be according to current CPUC-required guidelines, the resulting fields would be at levels the CPUC considers appropriate for lines of the same voltage and current-carrying capacity. It is compliance with these existing design guidelines that constitutes compliance with current CPUC requirements as specified in CPUC's General Order 95,

General Order 52, General Order 131 D, Title 8, and Group 2 High Voltage Electrical Safety Orders, sections 2700 through 2974 of the California Code of Regulations.

Conclusion

Since the reconductored downstream line segment would be operated at the same 230-kV voltage as the proposed PPEC line, the levels of the electric field-related line impacts would remain the same along the route of the proposed power transmission system. The long-term, mostly residential magnetic exposure of health concern in recent years would be insignificant for the proposed line and related downstream reconductoring given the absence of residences along the two candidate routes for the proposed PPEC and the existing routes for the downstream segment to be reconductored. On-site worker or public exposure would be short term and at levels expected for SDG&E lines of similar design and current-carrying capacity. Such exposures have not been established as posing a significant hazard to human health.

3.11 TRAFFIC & TRANSPORTATION

Impacts of Reconductoring and Undergrounding

The traffic congestion impacts of 20 workers traveling to and from the reconductoring and undergrounding sites would be negligible. Even if each worker commuted individually in his/her own vehicle, construction would generate a maximum of only 40 daily one-way trips. This is much less than the 658 daily one-way trips that would be generated by peak construction of the PPEC. This amount of traffic is negligible and would not cause significant impacts to roadway or freeway level of service (LOS).

However, system upgrades could potentially cause other traffic impacts. During reconductoring, there would be a small chance of a conductor breaking and falling across roads or freeways, creating a traffic hazard and blocking traffic. To mitigate this potential impact, crews should set up temporary structures (i.e., netting) across these roadways and freeways to catch any falling conductors. Improper staging could also block traffic. To avoid this impact, crews should stage construction in areas as far from roadways and freeways as possible. Finally, 60 feet of the undergrounding work would take place within the right-of-way of Commercial Street, requiring a lane closure. To mitigate potential traffic hazards and reduce impacts to LOS, crews should implement a traffic control plan that includes signage and flagmen. Crews also must restore the right-of-way after completion of the work.

Impact Minimization Measures

Staff recommends that the following measures, discussed above, be implemented during construction to mitigate potential impacts resulting from reconductoring and undergrounding:

- Crews should set up protective temporary structures (i.e., netting) across roadways and freeways crossed by the transmission lines to be reconductored. These structures must prevent any broken conductors from landing in the path of vehicles below. When setting up these temporary structures, the crew should use signing and flagmen to redirect traffic.

- Crews should stage construction in areas as far from roadways and freeways as possible and in a way to minimize impacts to LOS.
- Crews should implement a traffic control plan using signage and flagmen to direct traffic during undergrounding work at Commercial Street.
- After project completion, crews must restore the Commercial Street right-of-way, and any other right-of-way damaged during construction.

Conclusion

Based on the temporary nature of the reconductoring and undergrounding activities, the minimal staffing required (20 workers), and implementation of the above mitigation measures, staff concludes that any potential impacts to traffic and transportation would be less than significant.

3.12 VISUAL RESOURCES

Environmental Setting

The Escondido-Palomar 230 kV #1 and #2 lines extend approximately 1,200 circuit feet from the Escondido Substation toward the Palomar Energy Center, in the City of Escondido, California. The 69kV line to be undergrounded extends from the Escondido Substation, parallel to Lines # 1 and # 2, and is approximately 600 circuit feet in length. Abutting land uses in the project area include transportation, communication and utility corridors, commercial and office, and undeveloped[7] zones. Aerial views from Google Earth[8] and Figure 11 provided by the applicant indicate the existence of four transmission lines within the Transportation, Communication and Utility zone, which extend into the Undeveloped zone. To the east of the lines are both Commercial and Office as well Transportation, Communication and Utility zones. West of the lines, the abutting uses are Transportation, Communication and Utility and Undeveloped zones. The Google Earth imagery shows a large construction project west of the transmission corridor. Staff has identified this complex as Palomar Medical Center. It is planned to be a 56-acre medical campus located within the boundaries of the Escondido Research and Technology Center.[9]

The Friars-Doublet Tap 138kV line extends 10,500 feet (1.99 miles) from the Friars Substation in the City of San Diego toward the Old Town Substation. The Old Town Substation is not shown on Figure 2 but is approximately 0.44 mile from where the Friars-Doublet Tap lines turn toward the north, at the corner of Riley and Azusa Streets. Much of this existing route is located on SDG&E-owned parcels and the balance is within a 110-foot right-of-way (ROW). Approximately two-thirds of the route roughly parallels Friars Road. The route crosses surface streets as well as Highway 163. Within the 500-foot buffer shown in Figure 2, it passes by two university campuses, residential

[7] Much of what the applicant identifies as the "Undeveloped" Zone falls within the Escondido Research and Technology Center Specific Plan Area, adopted on February 8, 2006.

[8] Google Earth, 8-23-2010.

[9] To be operated by Palomar Pomerado Health with a scheduled opening in 2012. http://www.pph.org/PPHContentPage.aspx?nd=180

and commercial developments and one church. It is also in the vicinity of a large shopping mall, Fashion Valley, along the southern frontage of Friars Road.

Visual Sensitivity

Escondido – Palomar

The Escondido – Palomar transmission line segment crosses over Auto Park Way and roughly parallels Citricado Parkway, in a generally north-south alignment. The most sensitive viewers would be the motorists travelling on these two roads, the employees of the small commercial office buildings on Commercial Street and along Auto Park Way near the Escondido substation and viewers from the new Palomar Medical Center. The distance of the poles from motorists travelling on Citricado Parkway varies from approximately 300 feet to 450 feet[10]. The distance to the poles visible from Commercial Street varies from approximately 50 feet to 230 feet. Poles nearest Commercial Street and their associated 69 kV lines are the ones proposed to be moved underground. The remaining poles are part of the 230kV #1 and # 2 lines.

Visibility from Commercial Street is high. Construction work in this area would have the greatest impact on viewers, particularly as the excavation for the underground lines takes place. Visibility from Citracado is limited due to topography and landscape mounding and plantings along the east side of the road. The information provided does not specify a construction date, merely that the time for completion would be 4 to 6 months. The Palomar Medical Center is scheduled to open in 2012. Visibility of the transmission lines from the hospital complex would be high. This can be seen in a City of Escondido staff presentation to Council, wherein a simulation of the new building in the landscape clearly shows both the transmission lines and the Palomar Energy Center in the view[11]. Viewers from the hospital would have transitory views mixed with longer-term views from hospital rooms or offices. Visual sensitivity overall is moderate to high.

Friars-Doublet Tap

The Friars-Doublet Tap transmission line originates at the Friars Substation, crosses over an office park on Mission Valley Road and heads toward Highway 163. The existing line crosses directly over the highway as well as the Friars Road on-ramp to Highway 163.From this point, it roughly parallels Friars Road in a south-easterly direction within the right-of-way.

Visibility from within the office park, from highway 163 and the Friars Road on-ramp is high. Reconductoring construction activities would have the greatest visual impact in these areas, and especially for the motorists on the on-ramp. There is at least one pole located within the landscape area encircled by the on-ramp. Beyond the highway, the transmission line passes some residential areas as well as a college campus. There appear to be areas where the topography blocks direct views of the line and other areas where it is quite visible. Due to the distance from Friars Road, the topography and intervening foreground landscape elements, this segment west of the on-ramp has

[10] Approximate measurements from Google Earth.

[11] September 12, 2007. http://www.escondido.org/Data/Sites/1/media/pdfs/Planning/Hospital/CityCouncilPresentation.pdf

moderate to high visibility. Because of large number of residential viewers and motorists, the visual sensitivity overall is high.

Visual Change

Escondido – Palomar

All work is projected to take 4-6 months, at an unknown time of year. Work is proposed to take place within the existing rights-of-way and substations. At this time, the exact number of required pull stations is unknown, but it is assumed they would be located at angle towers whenever possible. Tower modifications and excavation work near the towers are not anticipated at this time. Construction equipment and activities would be visible to motorists on Citricado Parkway, as well as to visitors and employees of the Palomar Medical Center. Due to the short duration of project construction, distance to the lines and the existing topography and intervening foreground landscape elements along Citricado Parkway, visual change will be low, therefore any potentially adverse visual impacts during construction in these areas would not be significant. However, it is possible that the views of the construction and the completed lines would be highly visible from the hospital. The short duration of the construction period and the distance to the lines would make the degree of visual change low to moderate and therefore less than significant.

The area of most visual change during construction and post-constriction is from Auto Park Way to the Escondido Sub Station, in the vicinity of Commercial Street. This is the area where the lines would be moved underground. There would likely be a significant visual impact during construction and potential re-routing of motorists and pedestrians in the area. The degree of visual change during construction and post-construction would be high, (and thus could be significant in circumstances given the moderate to high sensitivity) but due to the temporary nature of these changes, the visual impact is less than significant. The post-construction view would be improved by the removal of a series of large, above-ground industrial poles seen in close proximity to the viewers, so that while there is a high degree of change, it is less than significant as it improves the view by removal of dominant clutter.

All construction areas and the rights-of-way are proposed to be restored to their pre-project conditions.

Friars-Doublet Tap

All work is projected to take 4-6 months, at an unknown time of year. Work is proposed to take place within the existing rights-of-way and substations. At this time, the exact number of required pull stations is unknown, but it is assumed they would be located at angle towers whenever possible. Tower modifications and excavation work near the towers are not anticipated at this time. Construction equipment and activities would be visible to motorists on adjacent roadways, as well as to residents living near the existing corridor. Due to the short duration of project construction, any potentially adverse visual impacts that would occur during construction would not be significant. The construction areas and the rights-of-way are proposed to be restored to their pre-project conditions

Conclusion

The landscape through which the two transmission corridors traverse is in urbanized areas. These landscapes include existing industrial facilities such as towers, electrical generating stations and sub-stations. The urbanized landscapes vary from densely developed commercial-industrial areas to residential subdivisions. No designated scenic highways or resources would be affected by the project.

No changes to the existing transmission towers are anticipated, with the exception of the segment of the Palomar line that will be moved underground. Therefore, the new conductors would not degrade the visual quality of the viewed landscape. Once construction is complete, this change to the transmission line would be undetectable to most viewers of the line, including motorists and residents living near the area. All visual impacts would be temporary and construction-related. There would be no significant adverse visual impacts, therefore no mitigation measures beyond those proposed by the applicant would be necessary as long as the replacement conductors are non-specular (non-reflective). The project would need to comply with applicable federal, state and local laws, ordinances and regulations (LORS). Final determination of environmental impacts and mitigation needed would be the responsibility of the permitting agency, the California Public Utilities Commission (CPUC).

4.0 CONCLUSION

This analysis of potential impacts of reconductoring electrical transmission system lines was prepared to inform the Energy Commission Committee and the general public of the potential direct and indirect effects of this project, which is considered a reasonably foreseeable development resulting from the PPEC project. The analysis of potential environmental impacts is based on a planning-level project description of required facilities and measures to minimize potential effects are recommended.

The proposed project would not result in significant and unmitigable impacts to any issue area. The following technical areas would not be impacted by the proposed transmission system upgrades: Facility Design, Power Plant Efficiency and Power Plant Reliability, For the remainder of the technical areas, it is anticipated that environmental impacts associated with the proposed downstream upgrades would be less than significant with implementation of the recommended mitigation measures identified herein. Additional measures may be required by CPUC and CALISO upon further environmental analysis pursuant to CEQA, once preliminary project design information is available.

5.0 REFERENCES

References

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CSD 2010 – City of San Diego General Plan, Land Use and Community Planning Element, General Plan Land Use and Street System Map, Figure LU-2.

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PPEC 2011X

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ALTERNATIVES

Eric K. Solorio

INTRODUCTION

In this section staff evaluated potentially feasible alternatives to the proposed construction and operation of the Pio Pico Energy Center (PPEC). Specifically, this alternatives analysis considers alternatives that are potentially capable of reducing or avoiding any adverse impacts of the proposed project (Cal. Code Regs., tit. 14, §15126.6; Cal. Code Regs., tit. 20, §1765). The analysis is provided to foster informed decision making and public participation in the review of the proposed project.

DETERMINING THE SCOPE OF THE ALTERNATIVES ANALYSIS

The Guidelines for Implementation of the California Environmental Quality Act (CEQA), Title 14, California Code of Regulations, section 15126.6(a), provides direction for scoping the alternatives analysis by requiring an evaluation of alternatives based upon the comparative merits of "a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project." In addition, the analysis must address the "No Project" alternative (Cal. Code Regs., tit. 14, §15126.6[e]).

The range of alternatives is governed by the "rule of reason" which requires consideration only of those alternatives necessary to permit a reasoned choice. The potentially feasible alternatives are intended to foster informed decision making and public participation. The CEQA guidelines state that an environmental document does not have to consider an alternative where the effect cannot be reasonably ascertained and whose implementation is remote and speculative (Cal. Code Regs., tit. 14, §15126.6[f][3]). To prepare the alternatives analysis, staff used the following methodology:

- Identify the basic project objectives.
- Identify the proposed project's significant adverse environmental impacts.
- Identify alternative project sites.
- Perform an initial site suitability screening then compare environmental impacts of the proposed project site with each alternative site.
- Consider the "No Project" alternative.
- Identify alternative energy generation technologies.
- Evaluate and determine whether an alternative energy generation technology is feasible as a project alternative.

- Conclude whether or not a different technology or an alternative site will yield less of an environmental impact and therefore be environmentally preferred over the proposed project.

BASIC OBJECTIVES OF THE PROJECT

The PPEC's basic project objectives applied to this analysis are as follows:

- Construct and operate a generating facility with a minimum, nominal rating of 100-megawatts (MW);
- Construct and operate a generating facility with the ability to provide quick start operations;
- Project shall be online by end of 2014;
- Located in SDG&E service territory;
- If natural gas-fired technology is used then heat rates will be no higher than 10,500 British thermal units per kilowatt hour (btu/kWh) and the project shall operate under a fuel tolling agreement with SDG&E under a 20-year contract;
- Capable of operating under all permits at annual capacity factors of a minimum of 30% with an availability of >98%; and
- Use flexible generating resources that can provide regulation during the morning and evening ramps and/or units that can be started and shut down as needed.

POTENTIAL SIGNIFICANT ENVIRONMENTAL IMPACTS OF THE PROJECT

The PPEC's potentially significant environmental impacts can be mitigated to a less than significant level by implementation of mitigation measures identified in this PSA. However, for the purposes of this alternatives analysis, staff considered whether any of the significant impacts could have been avoided or lessened – prior to mitigation. Because CEQA allows the analyst flexibility to consider alternatives that reduce "*any* of the significant effects of the project", staff's first step is to identify significant impacts from one or more environmental areas to compare against project alternatives. As discussed below, staff considered the following environmental areas where potentially significant impacts could occur: air quality, biological resources, traffic & transportation systems, ambient noise levels and visual resources.

AIR QUALITY

The proposed PPEC would emit criteria pollutants and their precursors during construction, commissioning and operation. Criteria air pollutants are defined as air contaminants for which the state and/or federal government has established an ambient air quality standard to protect public health. The criteria pollutants that would be emitted by the PPEC include nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide

(CO), ozone (O_3), inhalable particulate matter (PM10), and fine particulate matter (PM2.5). In addition, Nitrogen oxides (NOx, consisting primarily of nitric oxide [NO] and NO_2), sulfur oxides (SOx) and volatile organic compounds (VOC) would also be emitted.

All project emissions of nonattainment criteria pollutants and their precursors (NOx, VOC, PM10, PM2.5, and SOx) are considered significant and therefore staff recommended condition's of certification that would mitigate all emissions to less than significant levels. (see **Air Quality** chapter for more information)

BIOLOGICAL RESOURCES

The potential for the proposed PPEC project area to support sensitive biological resources is low; no special-status wildlife species were observed and only one special-status plant species was identified (San Diego marsh-elder; California rare plant rank 2.2). However, sensitive biological resources may be potentially found along the proposed linear routes and adjacent to the project site, particularly along the drainage under biological conservation easement near proposed Transmission Line Route B.

Impacts to special-status species from construction and operation of the proposed PPEC include potential loss of dens along the linear routes, disturbance to breeding or nesting animals in habitat adjacent to the PPEC site and linear routes, and disturbance impacts from construction and operation noise and lighting. Direct impacts to the majority of special-status species would be avoided and minimized by conducting comprehensive pre-construction surveys, erecting exclusion fencing prior to site mobilization, and avoiding the biological conservation easement (including the drainage).

Significant indirect and cumulative impacts to critical habitat for the federally endangered Quino checkerspot butterfly, federally threatened coastal California gnatcatcher, and federally threatened and state endangered Otay tarplant in the nearby San Ysidro Mountains would occur from nitrogen deposition caused by PPEC emissions and the resultant noxious weed proliferation and cascading ecological effects (e.g., competition, habitat type conversion, and wildfire).

With implementation of applicant-proposed impact avoidance and minimization measures and staff's proposed conditions of certification, direct impacts to biological resources would be less than significant.

NOISE

The PPEC would include an integral stack/silencer system and noise attenuating materials used in the turbine housing to reduce noise. Considering the proximity to noise receptors, the project's impacts to ambient noise levels are considered to be less than significant.

TRAFFIC AND TRANSPORTATION

The proposed PPEC would not adversely impact the Level of Service (LOS) standards for roadways used by the project developer and its contractors. Any potential impacts

would only arise if any of the trucks used in construction happen to damage any roads which staff proposed conditions to repair such damage. The second type of potential impact would be from trenching roadways to install the underground natural pipeline.

VISUAL RESOURCES

The project would result in a moderate to high degree of visual change, consequently visual impacts would be significant. New landscape perimeter plantings and street tree plantings would provide a vibrant screen of vegetation that would mitigate the visual impact of the project structures. Therefore, adoption of staff's recommended conditions of certifications would ensure the project does not contrast with the surroundings and therefore reduce the impacts to a less than significant level.

WATER RESOURCES

In the area of water resources, staff has determined that prior to any proposed or recommended mitigation the project would not result in any significant adverse impacts to water resources. As such, this resource area was excluded from further consideration.

IDENTIFY, SCREEN AND EVALUATE ALTERNATIVE PROJECT SITES

The next step in staff's analysis was to identify potential alternative project sites. Staff began by evaluating the AFC, its site screening criteria, potential alternative sites considered in the AFC and supplemental information filed by the applicant. Next staff visited the proposed project site and surrounding area to determine whether the alternative sites evaluated in the AFC represent a reasonable range of alternative sites.

Staff concludes the seven alternative projects sites evaluated in the AFC are reasonable alternatives to the proposed project. The following discussion evaluates whether each alternative site could potentially attain most of the basic project objectives and potentially avoid or substantially lessen one or more of the significant effects of the project." (Cal. Code Regs., tit. 14 §15126.6(a)).

SITE FEASIBILITY CRITERIA

Each site should have the following attributes in order to be considered as an alternative site to the PPEC:

1. A minimum of nine acres in size;

2. Have zoning that is compatible with the development of a power plant (i.e. industrial or heavy industrial) or be within the jurisdiction of a local government whom would likely support a zone change for the development of a power plant;

3. Be located a minimum of 1,000 feet from the nearest noise receptor (i.e. residential neighborhood, school, etc);

4. Be located a minimum of 1,000 feet from the nearest key observation point over the view shed which the site is located and would potentially adversely affect;

5. Be located within five miles of the nearest high voltage electrical transmission line;

6. Be located within five miles of the nearest natural gas trunk line; and

7. Be located within five miles of potable water and recycled water service mains.

COMPARATIVE ANALYSIS OF ALTERNATIVE PROJECT SITES

Alternative Site "A" – North Main Street

Site A is located on the north side of Main Street between Nirvana and Heritage Roads. This site is surrounded by recycling complexes to the north and west, and undeveloped, mostly undisturbed land to the east and south. (see **Alternatives Figure 1**) This site is 18 acres in size and part of APN 6440500600.

Topography

Site A is hilly and is bifurcated by a deep natural ravine through the center of the site. This approximately 400 x 2,000 feet oblong site is positioned between Main street to the south and a plateau to the north, with an elevation ranging from about 160 to 200 feet above mean sea level (AMSL) along the north site line and about 130 feet AMSL along Main Street. Given this irregular topography, this site would require significantly more grading as compared to that of the proposed site which is already graded, however despite the added engineering and construction costs associated with site excavation, at this stage of the analysis, the additional cost is presumed to be economically feasible in order to allow further analysis herein.

Biological Resources

Because the site is primarily undisturbed land located adjacent and just north of the Otay River, it has the potential to support sensitive biological resources, special-status wildlife species and or special-status plant species. Although protocol level biological surveys have not been conducted, based upon a query of the California Natural Diversity Database (CNDDB), it is reasonable to assume the site has the potential to support habitat for the species listed in **Alternatives Table-1**, below. Given the foregoing, grading of this site would likely result in some level of significant impacts to biological resources.

Alternatives Table 1
Biological Resources Potentially Affected on Alternative Site "A",

Common Name	Scientific Name	Status*
Plants		
San Diego thorn-mint	*Acanthominta ilicifolia*	FT, SE, RPR 1B.1, S2, G2, MSCP
San Diego marsh-elder	*Iva hayesiana*	RPR 2.2, S2.2?, G3?

Alternatives Table 1 Biological Resources Potentially Affected on Alternative Site "A",		
Common Name	**Scientific Name**	**Status***
Robinson's pepper-grass	*Lepidium virginicum var. robinsonii*	RPR 2.2, G5T2?, S2.2
Laguna Mountains jewel-flower	*Streptanthus bernardinus*	RPR 4.3, S3.3, G3
Parry's tetracoccus	*Tetracoccus dioicus*	RPR 1B.2, S2.2, G3, MSCP
Invertebrates		
western beach tiger beetle	Cicindela latesignata latesignata	G4T1T2 S1
western tidal-flat tiger beetle	Cicindela gabbii	G4, S1

***Status Legend**
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

State SE = State listed as endangered
Local MSCP = County of San Diego Multiple Species Conservation Plan covered species

California Native Plant Society Rare Plant Rank (RPR)
List 1B = Rare, threatened, or endangered in California and elsewhere
List 2 = Rare, threatened, or endangered in California but more common elsewhere
List 3 = Plants which need more information
List 4 = Limited distribution – a watch list
List 1A = Presumed extinct because they have not been seen or collected in the wild in California for many years. This list also includes plants which are presumed extirpated

Threat Rank
0.1 = Seriously threatened in California (high degree/immediacy of threat)
0.2 = Fairly threatened in California (moderate degree/immediacy of threat)
0.3 = Not very threatened in California (low degree/immediacy of threats or no current threats known)

Global Rank/State Rank
Global rank (G-rank) and State rank (S-rank) is a reflection of the overall condition of an element throughout its global (or State) range. Subspecies are denoted by a T-rank; multiple rankings indicate a range of values. State rank (S-rank) is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank. An H-rank indicates that all sites are historical.
G1 or S1 = Critically imperiled – At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
G2 or S2 = Imperiled – At high risk of extinction or elimination due to very restricted range, very few populations, steep declines, or other factors.
G3 or S3 = Vulnerable – At moderate risk of extinction or elimination due to a restricted range, relatively few populations, recent and widespread declines, or other factors.
G4 or S4 = Apparently Secure – Uncommon but not rare; some cause for long-term concern due to declines or other factors.
G5 or S5 = Secure – Common; widespread and abundant.
G#G# and S#S# = Range Rank is used to indicate the range of uncertainty about the exact status of a taxon or ecosystem type.
Q = Questionable taxonomy that may reduce conservation priority.
H = Possibly extinct
? = Inexact numeric rank
T# = Infraspecific taxon refer to subspecies, varieties and other designations below the level of species.

Land Use and Zoning

This site and all the surrounding land is zoned "Industrial" which is consistent with the project's use.

Noise Levels

The nearest noise receptors to Site A are residences along Quarterdeck Lane located about 1,500 feet southwest of the site. At this time it is unknown what the ambient noise levels are. This distance, however, meets the minimal 1,000 foot receptor distance criteria.

Visual Resources

The nearest KOPs are located along Quarterdeck Lane located about 1,500 feet southwest of the site. Many of these residences have substantial views of the site and therefore locating the PPEC at Site A has the potential to create a significant visual impact that is difficult, if not impossible to mitigate due to the higher elevation of some of the nearby residential neighborhoods. This distance, however, meets the minimal 1,000 foot receptor distance criteria.

Off-Site Linear, Project Infrastructure

Analysis of the engineering, economic feasibility and environmental impacts associated with Alternative Site A's off-site project infrastructure is essentially the same as the analysis for Sites B and C, due to their close proximity.

The nearest natural gas trunk line of sufficient capacity and reserve is located about 5 miles from this site. This is the same main trunk line that will serve the proposed site. (see **Alternatives Figure 1**) Compared to the proposed site's need for an 8,000 to 10,300-foot natural gas line connection, this site alternative will result in additional costs, impacts to roadways and temporary impacts to traffic from construction activities including trenching the roadway or road shoulder to install the new underground natural gas pipeline. The installation of the natural gas line would likely result in direct impacts to biological resources due to the undisturbed habitat along Wiley Road which runs parallel and adjacent to the Otay River.

The nearest feasible 230kV electrical interconnection is located near the existing natural gas line described above, and will be approximately five miles in length. (see **Alternatives Figure 1**) The need for a much longer electrical transmission generation tie line will also require more ground disturbance to install new transmission line towers and string electrical transmission cables over a longer distance. Locating a new transmission line and associated towers parallel with the Otay River valley could potentially result in immitigable visual impacts. At a minimum, the segment of new transmission towers needed along Main Street would have a significant potential to create an immitigable impact to the view shed of the nearby residential neighborhoods that are located upslope with views of undisturbed landscape. It could also potentially impact the view shed of motorists who use this road on a regular basis.

Recycled water needs could eventually be served by Otay Water District (OWD) via a new supply line that is estimated to be 4,800 feet long. Construction of this new underground pipeline linear would have higher engineering and capital costs, and could result in more environmental impacts as compared with the proposed site, given that the

proposed site's water pipeline is already installed. It is noteworthy that OWD has no greater ability to deliver recycled water to this alternative site than to the proposed site. OWD is currently constrained by a limited supply of recycled water.

Conclusion

Alternative Site "A" meets the site feasibility criteria of parcel size, minimum distance to nearest noise receptor, existing zoning and maximum distance to electrical transmission lines. Although the site would result in increased engineering and construction costs, those costs are presumed to be feasible when considered as a percentage of the overall project cost.

Development of the PPEC on Alternative Site "A" would likely result in significant, direct impacts to biological resources as compared with no "direct" impacts resulting from development of the proposed site. Also, the increased noise levels could potentially result could affect breeding habitat of listed species that may exist along the adjacent Otay River. The increased noise levels could also impact the nearby residential communities.

Further, due to the topography of the area, development of this site would potentially result in immitigable impacts to visual resources by adversely changing the view shed of residents who live upslope of the project site. These changes would result from the height of the exhaust stacks and construction of transmission towers (and lines) that would also be required to facilitate development of this site.

Alternative Site "B" – South Main Street

Alternative Site "B" is located on south side of Main Street between Nirvana Road and Bradywine Avenue. This site is surrounded by auto dealerships to the west and northwest, vacant disturbed lot to the north, warehouse facilities to the northeast, disturbed/undeveloped lot to the east and undisturbed open space to the south. (see **Alternatives Figure 1**) Site B consists of approximately ten acres located along Main Street. The site slopes to the south toward the Otay River valley. The entire site has been disturbed.

Biological Resources

Alternative Site B is completely disturbed and has only a minimal amount of vegetation. However, because it borders the Otay River it could impact the biological resources listed in Table 2, below:

Alternatives Table 2 Biological Resources Potentially Affected on Alternative Site "B"		
Common Name	Scientific Name	Status*
Plants		
San Diego thorn-mint	Acanthominta ilicifolia	FT, SE, RPR 1B.1, S2, G2, MSCP
San Diego marsh-elder	Iva hayesiana	RPR 2.2, S2.2?, G3?
Robinson's pepper-grass	Lepidium virginicum var. robinsonii	RPR 2.2, G5T2?, S2.2
Laguna Mountains jewel-flower	Streptanthus bernardinus	RPR 4.3, S3.3, G3
Parry's tetracoccus	Tetracoccus dioicus	RPR 1B.2, S2.2, G3, MSCP
Invertebrates		
western beach tiger beetle	Cicindela latesignata latesignata	G4T1T2 S1
western tidal-flat tiger beetle	Cicindela gabbii	G4, S1
Birds		
least Bell's vireo	Vireo bellii pusillus	FE, SE, MSCP

*** status legend for all Alternative Tables is located after Alternatives Table 1, above**

Land Use and Zoning

This site is zoned "Industrial," which is consistent with the project's use.

Noise Levels

The nearest sensitive receptors to Site B are residences located about 1,100 feet south on Dennery Road and residences located about 1,500 feet north on Jeremy Point Court. These nearest receptor locations meet the minimal 1,000 foot receptor distance criteria. (see **Alternatives Figure 1**)

Off-Site Linear, Project Infrastructure

Analysis of the engineering, economic feasibility and environmental impacts associated with Alternative Site B's off-site project infrastructure is essentially the same as the analysis for Sites A and C, due to their close proximity to each other.

The nearest natural gas trunk line of sufficient capacity and reserve is located about 5 miles from this site. This is the same main trunk line that will serve the proposed site. (see **Alternatives Figure 1**) Compared to the proposed site's need to construct an 8,000 to 10,300-foot natural gas line connection, this site alternative will result in additional costs, impacts to roadways and temporary impacts to traffic from construction activities including trenching the roadway or road shoulder to install the new underground natural gas pipeline. The installation of the natural gas line would likely result in direct impacts to biological resources due to the undisturbed habitat along Wiley Road which runs parallel and adjacent to the Otay River.

The nearest feasible 230kV electrical interconnection is located near the natural gas line described above, and will be approximately five miles in length. (see **Alternatives Figure 1**) The need for a much longer electrical transmission generation tie line will also require more ground disturbance to install new transmission line towers and string

electrical transmission cables over a longer distance. Locating a new transmission line and associated towers parallel with the Otay River valley could potentially result in immitigable visual impacts. At a minimum, the segment of new transmission towers needed along Main Street would have a significant potential to create an immitigable impact to the view shed of the nearby residential neighborhoods that are located upslope with views of undisturbed landscape. It could also potentially impact the view shed of motorists who use this road on a regular basis.

Recycled water needs could eventually be served by OWD via a new supply line that is estimated to be 4,800 feet long. Construction of this new underground pipeline linear would have higher engineering and capital costs, and could result in more environmental impacts as compared with the proposed site, given that the proposed site's water pipeline is already installed. It is noteworthy that OWD has no greater ability to deliver recycled water to this alternative site than to the proposed site. OWD is currently constrained by a limited supply of recycled water.

Conclusion

Alternative Site "B" meets the site feasibility criteria. Although the site would result in increased engineering and construction costs, those costs are presumed to be feasible when considered as a percentage of the overall project cost.

Development of the PPEC on Alternative Site "B" would likely result in significant, direct impacts to biological resources as compared with no "direct" impacts resulting from development of the proposed site. Also, the increased noise levels could potentially result could affect breeding habitat of listed species that may exist along the adjacent Otay River. The increased noise levels could also impact the nearby residential communities.

Further, due to the topography of the area, development of this site would potentially result in immitigable impacts to visual resources by adversely changing the view shed of residents who live upslope of the project site. These changes would result from the height of the exhaust stacks and construction of transmission towers (and lines) that would also be required to facilitate development of this site.

Alternative Site "C" – Maxwell Road

Site C is located on Maxwell Road about 1,000 feet north of Main Street and on the east side of Maxwell Road. It is surrounded by a municipal landfill to the northeast, auto recycling complex to the east, commercial buildings and parking to the west, and vacant disturbed undeveloped land to the south. (see **Alternatives Figure 1**) This site is part of APN 6440406100. Staff believes further negotiations could result in the potential to acquire the necessary 10 acres or acquire the parcel adjoining it on the southern boundary. Therefore, staff will proceed with this analysis on the assumption an adequate amount of land can be acquired in this location

Biological Resources

Alternative Site C is mostly used as a parking lot and has very little vegetation. However, because the site borders undisturbed lands to the north and northwest which may have suitable habitat for flora and fauna, the development of the PPEC on this site could potentially impact the biological resources listed in **Table 3**, below:

Alternatives Table 3
Biological Resources Potentially Affected on Alternative Site "C"

Common Name	Scientific Name	Status[1]
Plants		
San Diego thorn-mint	*Acanthominta ilicifolia*	FT, SE, RPR 1B.1, S2, G2, MSCP
Robinson's pepper-grass	*Lepidium virginicum var. robinsonii*	RPR 2.2, G5T2?, S2.2
Laguna Mountains jewel-flower	*Streptanthus bernardinus*	RPR 4.3, S3.3, G3
Parry's tetracoccus	*Tetracoccus dioicus*	RPR 1B.2, S2.2, G3, MSCP
Invertebrates		
western beach tiger beetle	Cicindela latesignata latesignata	G4T1T2 S1
western tidal-flat tiger beetle	Cicindela gabbii	G4, S1

Land Use and Zoning

This site is zoned "Industrial," which is consistent with the project's use.

Noise Levels

The nearest noise receptors to Site C are residences located about 1,300 feet northeast on Jeremy Point Court. These nearby receptor locations meet the minimal 1,000 foot receptor distance criteria. (see **Alternatives Figure 1**)

Off-Site Linear, Project Infrastructure

Analysis of the engineering, economic feasibility and environmental impacts associated with Alternative Site C's off-site project infrastructure is essentially the same as the analysis for Sites A and B, due to their close proximity.

The nearest natural gas trunk line of sufficient capacity and reserve is located about 5 miles from this site. This is the same main trunk line that will serve the proposed site. (see Alternatives Figure 1) Compared to the proposed site's need to construct an 8,000 to 10,300-foot natural gas line connection, this site alternative will result in additional costs, impacts to roadways and temporary impacts to traffic from construction activities including trenching the roadway or road shoulder to install the new underground natural gas pipeline. The installation of the natural gas line would likely result in direct impacts to biological resources due to the undisturbed habitat along Wiley Road which runs parallel and adjacent to the Otay River.

The nearest feasible 230kV electrical interconnection is located near the natural gas line described above, and will be approximately five miles in length. (see **Alternatives Figure 1**) The need for a much longer electrical transmission generation tie line will also require more ground disturbance to install new transmission line towers and string electrical transmission cables over a longer distance. Locating a new transmission line and associated towers parallel with the Otay River valley could potentially result in immitigable visual impacts. At a minimum, the segment of new transmission towers needed along Main Street would have a significant potential to create an immitigable impact to the view shed of the nearby residential neighborhoods that are located upslope with views of undisturbed landscape. It could also potentially impact the view shed of motorists who use this road on a regular basis.

Recycled water needs could eventually be served by OWD via a new supply line that is estimated to be 4,800 feet long. Construction of this new underground pipeline linear would have higher engineering and capital costs, and could result in more environmental impacts as compared with the proposed site, given that the proposed site's water pipeline is already installed. It is noteworthy that OWD has no greater ability to deliver recycled water to this alternative site than to the proposed site. OWD is currently constrained by a limited supply of recycled water.

Conclusion

Alternative Site "C" meets the initial screening criteria of parcel size, minimum distance to nearest noise receptor, existing zoning and maximum distance to electrical transmission lines. Although the site would result in increased engineering and construction costs, those costs are presumed to be feasible when considered as a percentage of the overall project cost.

Development of the PPEC on Alternative Site "C" could result in direct and or indirect impacts to biological resources. Primarily from the increased noise levels that could potentially affect breeding habitat of listed species that may exist along the adjacent Otay River or in the undisturbed lands immediately to the northwest. The increased noise levels could also impact the nearby residential communities.

Further, due to the topography of the area, development of this site would potentially result in immitigable impacts to visual resources by adversely changing the view shed of residents who live upslope of the project site. These changes would result from the height of the exhaust stacks and construction of transmission towers (and lines) that would also be required to facilitate development of this site.

Alternative Site "D" – Lower Otay Resevoir Mesa

The Lower Otay Reservoir Mesa site is located adjacent to the Otay Lakes Water Treatment Plant, and adjacent to and to the west of the Otay Lakes County Park. To the south and west of the site is partially disturbed open space preserve. Site D is on a 15-acre mesa that is perched midway between the ridge lines to the north and the Otay River valley to the south. The mesa is located within the Multiple Species Conservation

Program (MSCP) which would require that the site be removed from the MSCP and additional adjacent and biologically comparable land be added to the MSCP elsewhere.

Land Use and Zoning

Site D is within the City of Chula Vista jurisdictional boundary and is owned by the city. Although this parcel is zoned “Planned Community”, previous dialogue with the city of Chula Vista indicated the city had an interest in exploring a possible rezone of the site. As such, this site is presumed to meet the screening criteria with regard to zoning.

Noise Levels

The nearest noise receptor to this site is a county park ranger house that is located about 1,200 feet away. With the exception of a park ranger house, the nearest receptors to this site are in the community of Otay Ranch, about one mile to the northwest.

Off-Site Linear, Project Infrastructure

Site D was initially favored by the applicant due to the site’s close proximity to a sufficiently large natural gas main and a short distance for electrical transmission interconnection. At 3,350 feet and 1,200 feet, respectively, the nearby gas and electric interconnection point had lower engineering and construction costs.

In addition, the recycled water line is part of the OWD’s capital project plan that includes installing a recycled water main at the edge of this site. The nearest sewer connection is in about the same area as the gas main connection point, which is about 3,400 feet long. Access to Site D would require improvements to an existing road that is partially on San Diego County Park land, but primarily is on the City of San Diego water treatment facility land. All of the necessary improvements for this site, as described above, are technically and economically feasible.

Biological Resources

Due to the location within the MSCP, development of this site would result in significant impacts to biological resources. Therefore the U.S. Fish & Wildlife Service (USFWS) and the California Department of Fish & Game (CDFG) formally opposed the use of this site for a power plant.

Conclusion

This site does meet the initial screening criteria in terms of size, proximity to infrastructure connections and minimum distance from noise receptors. However, due to the potential of not being able to obtain a necessary permit for development through concurrence from the CDFG and USFWS to amend the MSCP, and the high biological cost in terms of impacts within the MSCP, this site is therefore ruled out as an environmentally preferred alternative.

Alternative Site “E”- Otay Mesa Road

There are three parcels of adequate size which are much closer to infrastructure connections than Alternative Sites A, B or C. These parcels are located on Otay Mesa

Road and identified as “Site E Parcels” on **Alternatives Figure 1**. Each of these parcels has compatible zoning and were considered as potential alternatives but eliminated during the evaluation process once it became evident the flight pattern of aircraft arriving and departing from the nearby Brown Field airport. The height of the exhaust stacks posed a hazard for aircraft.

SUMMARY OF ENVIRONMENTAL IMPACTS OF ALTERNATIVE SITES AS COMPARED WITH THE PROPOSED PROJECT SITE

Summary of Environmental Impacts From Applicant’s Proposed Site

The applicant for PPEC has proposed a project site that was previously used as a construction laydown area for the Otay Mesa Generating Station and more recently mass graded, as part of an unrelated project. The site is zoned industrial, has storm water retention basins which are connected to the regional storm water management system. The site has potable water and sewer service at the street with curb/gutter/sidewalk installed. There is also an existing recycled water pipeline that could be used once the OWD increases its supply of recycled water. In short, the proposed site is a ready-to-go, industrial building pad.

Due to the condition of the proposed site, staff does not expect the PPEC to result in any direct impacts to biological resources on the site. It is important to note the proposed project still has potential to result in some impacts from the installation of the linear infrastructure connections, and indirect impacts to biological resources off-site that are cumulatively considerable. During the course of staff’s review, the applicant made a significant project refinement by relocating its proposed Route A for the natural gas line (now called Modified Route A). This new route eliminated a portion of the proposed route along the unpaved segment of Alta Road thereby avoiding potential impacts to biological resources along that segment. (see **Alternatives Figure 1**)

During staff’s review of the AFC, the applicant made another significant project refinement by adding additional equipment to its proposed reverse osmosis (RO) water treatment facility which would treat the PPEC’s process water on-site. This additional RO equipment reduced the PPEC’s proposed water use by 17%. Due to this further improvement in the proposed efficient use of water resources and more so the absence of an impact to water resources, this alternatives analysis did not focus on alternatives to the PPEC’s proposed water use.

Due to the location of the proposed project site, staff concluded there will not be any significant impacts to the ambient noise level. Somewhat related, due to site selection (topography and distance to nearest receptors) staff found that the PPEC would result in impacts to visual resources however with implementation of staff’s recommended conditions of certification those impacts could be mitigated to less than significant levels.

Summary of Environmental Impacts From Alternative Sites "A", "B" and "C"

Alternative Sites A, B and C all meet the initial site feasibility criteria, could meet most of the basic project objectives and are therefore technically, logistically and economical to feasibly develop. However, compared to the proposed project site, development of the PPEC at any of these three alternative sites would result in a higher level of environmental impacts, primarily due to the much longer distance from the necessary infrastructure (i.e. high-voltage electrical transmission system and the trunk line for natural gas). These necessary infrastructure improvements would require disturbing nearly five linear-miles of land to install underground pipeline; 5-miles of high-voltage transmission lines and up to 33 new transmission towers along the route.

Development of the PPEC on any of these alternative sites would also result in a higher level of impacts to biological resources when compared to the existing industrial building pad at the proposed site. Site A would impact biological resources due to its undisturbed condition; Site B has a high potential to impact biological resources because it is directly adjacent to the Otay River and all three sites are within 1,000 feet of the Otay River valley corridor.

Each of the alternative sites are closer to noise receptors (residences) and would likely create an immitigable impact to visual resources due to the nearby neighborhoods, located at higher elevations which overlook the alternative sites. **Alternatives Table 4**, below, provides a side-by-side comparison of some key environmental areas.

Alternatives Table 4 Comparison of Alternative Sites With the Proposed Site				
	Proposed Site **Alta Road**	**Alternative Site A North Main Street**	**Alternative Site B South Main Street**	**Alternative Site C Maxwell Road**
Environmental Area	**Level of Impact and or Compliance with LORS**			
Air Quality[1]	Baseline	Equivalent	Equivalent	Equivalent
Biological Resources	No direct impacts on-site; No impact to Otay River valley Direct impacts along 2-miles of linear routes; Cumulatively considerable NOx	Direct impacts on-site; Impacts to Otay River valley Direct impacts along 5-miles of linear routes; Cumulatively considerable NOx	No direct impacts on site; Impacts to Otay River valley Direct impacts along 5-miles of linear routes; Cumulatively considerable NOx	No direct impacts on site; Impacts to Otay River valley; Direct impacts along 5-miles of linear routes; Cumulatively considerable NOx
High Voltage T-Line; New Towers	2,000 feet 5	12,500 feet 27	15,000 feet 32	15,500 feet 33
Land Use Designation	Industrial	Industrial	Industrial	Industrial
Noise Receptor[2]	4,700 feet	1,500 feet	1,100 feet	1,300 feet
Traffic Impacts[3]	One-half mile	5-miles	5-miles	5-miles
Visual	Less than significant w/ mitigation	Immitigable	Immitigable	Immitigable

THE "NO PROJECT" ALTERNATIVE

CEQA Guidelines and Energy Commission regulations require consideration of the "No Project" alternative. The guidelines state that "the purpose of describing and analyzing a No Project Alternative is to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project" (Cal. Code Regs., tit. 14 §15126.6(i)). Toward that end, the "No Project" analysis considers "existing conditions" and "what would be reasonably expected to occur in the foreseeable future if the project were not approved…" (§15126.6(e)(2)).

The "No Project" alternative would preclude any construction or operation and, thus, ground disturbing activities; installation of new foundations, piping, utility connections and other activities would not occur. Nor would there be any air emissions of criteria

[1] Staff assumes the impacts to air quality would be the same at any alternative site as compared with the proposed project site because the air emissions are a result of the fuel being combusted and the technology used for power generation.

[2] Distance to nearest residential neighborhood; noise receptor.

[3] Length of roadway disturbed by construction activities and or trenched to install underground natural gas pipeline.

pollutants resulting from the PPEC. In short, the site-specific and direct impacts associated with the PPEC would not occur at this site if the project does not go forward. Selection of the "No Project" alternative would render all concerns about the PPEC's impacts to be moot.

If the project were not built, San Diego Gas & Electric (SDG&E), as a utility provider, would not benefit from the efficient source of a local 300 MW electrical generation facility which this project would provide. Additionally, the "No Project" alternative would not allow SDG&E to meet the peak energy demands of its customers as contemplated in its Request for Offers which the PPEC successfully bid into. Nor would SDG&E be able to further support Local Resource Adequacy requirements, under Public Utilities Code Section 380. If the PPEC were not built, there would be less quick-start, generating assets that can compensate for the intermittency of solar and wind power generation facilities.

In light of the reliability mandates, peak energy demands and the need to have quick start generation capacity to compensate for the intermittency of renewable resources such as wind and or solar-electric power, in the absence of the proposed PPEC, other power plants would likely be constructed in the region to supply the SDG&E's demand for additional generation capacity that meets these needs. As discussed further in the Appendix to this Alternatives analysis, other new power plants could potentially have equivalent or greater environmental impacts, as compared to the proposed PPEC. As such, staff concludes the "No Project" alternative would not be a reasonable alternative to the proposed project which would meet existing needs.

ALTERNATIVE ELECTRICITY GENERATION TECHNOLOGIES

Although the impacts can be fully mitigated, the PPEC's impacts to air quality would be significant. As such, staff is expanding the scope of the alternatives analysis to evaluate different energy generation technologies. Considering the primary project objective is to provide quick start generating assets that can operate at up to 98% capacity factor, this portion of the analysis evaluates two technologies that can potentially obtain those key objectives.

Natural Gas-Fired, Simple-Cycle Combustion Turbine (Proposed Project)

The PPEC would consist of three General Electric LMS100 natural gas-fired combustion turbine generators (CTG). The total net generating capacity would be 300 megawatts (MWs), with each CTG capable of generating 100 megawatts. Given that the CTGs are proposed to be installed in simple cycle configuration, it is likely that the project will be operated or dispatched as a peaking power plant. However, each CTG would be permitted to operate 4,335 hours, or at an annual capacity factor of 49 percent.

Wartsilla Reciprocating Engines

Natural gas-fired reciprocating Wartsila engines generate 9.3 megawatts each. The Wartsila technology can provide 10 minute startups, and dispatch in increments of 3 percent of its total capacity while maintaining a relatively constant efficiency across the entire load range. In this analysis, staff modeled 33 reciprocating Wartsila engine generators (for a total of 306.9 MW) to approximate the characteristics of PPEC using this alternative technology.

Combined-Cycle Gas Turbine (CCGT)

Combined-cycle, natural gas turbine systems convert natural gas into electricity using the combustion process then convert the waste heat (resulting from the combustion process) into steam that drives a separate electric generator. Because the combined-cycle technology utilizes the waste heat, its efficiency can be as high as 50 percent, which is significantly higher than the proposed simple-cycle process. The drawbacks to the combined-cycle technology are the higher capital cost, longer startup times to reach maximum output capacity and increased use of water.

Technical data from the GWF Tracy Combined-Cycle Power Plant (GWF) was considered in this analysis because its capacity is similar to that of PPEC and was approved fairly recently (March 2010). The GWF power plant is a 314 MW combined-cycle power plant consisting of two GE Frame 7EA 84.4 MW CTGs; two duct fired heat recovery steam generators (HRSGs); and a 145 MW steam turbine generator (STG)).

SUMMARY OF AIR EMMISSIONS AND IMPACT ANALYSIS

Due to the highly technical nature of the air quality modeling, here staff is simply presenting the results of the air emission modeling for the alternative technologies. For further details please refer to **Alternatives Appendix A**.

Based upon the air dispersion modeling results, the Wartsila engines would have higher maximum hourly, daily, and annual emissions than the proposed simple-cycle CTGs. Wartsila engines have higher modeled air impacts for all pollutants than those from the simple-cycle CTGs of PPEC and as modeled at the Pio Pico site would cause new violations of 24-hour PM2.5 and federal 1-hour NO_2 standard.

Combined cycle CTGs, with necessary auxiliary sources such as auxiliary boilers, have higher modeled air impacts of all pollutants because of lower exit temperature and slower exit velocity. As modeled at the proposed site, combined cycle CTGs would cause new violations of both state and federal 1-hour NO_2 standards because of high startup emissions.

Under this scenario, combined-cycle CTGs would have higher emissions of NOx and CO during startups and lower emission rates of all pollutants during normal operations compared to simple-cycle CTGs of PPEC. However, annual emissions of all pollutants from combined-cycle CTGs are lower than simple-cycle CTGs of PPEC assuming same operating capacity factor. (see **Alternatives Table 5** on the next page)

Although annual emissions of all pollutants from combined-cycle CTGs are lower than simple-cycle CTGs of PPEC assuming same operating capacity factor, the combined-cycle CTG alternative does not meet the project's "quick start" objective which is presumed to be a start up time of no more than 15-minutes and ideally less than 10-minutes. It is unknown at this time whether another combined-cycle technology could meet the "quick start" objective.

Alternatives Table 5
Summary Comparison of Air Emissions From Alternative Generation Technologies

Maximum Hourly Emissions during Routing Operation (pounds per hour [lb/hour])

Source	NOx	VOC	PM10/PM2.5	CO	SOx
PPEC	79.9	19.6	17.2	160.5	5.7
Wartsila Engines	315.2	249.2	78.7	446.0	9.3
Combined Cycle	406.2	11.6	10.3	379.8	5.1

Maximum Daily Emissions during Routing Operation (pounds per day [lb/day])

Source	NOx	VOC	PM10/PM2.5	CO	SOx
PPEC	864.3	237.5	411.8	1,286.6	136.8
Wartsila Engines	1,551.0	1,620.4	1,262.2	1,783.8	205.8
Combined Cycle	2,246.2	164.5	263.7	3,213.7	108.8

Maximum Annual Emissions during Routing Operation (tons per year [tpy])

Source	NOx	VOC	PM10/PM2.5	CO	SOx
PPEC	70.4	19.4	37.2	96.4	12.4
Wartsila Engines	151.8	155.3	108.0	192.4	18.6
Combined Cycle	69.2	12.3	19.7	85.6	4.5

CONCLUSIONS

Staff concludes that Alternative Sites A, B and C are each feasible alternative sites that can be developed. However, each one of these sites would likely result in a higher level of impacts to biological resources, higher contributions to ambient noise levels and short-term impacts to traffic which affect much greater lengths of roadways.

Perhaps more significantly, development at any of these alternative sites would likely create immitigable impacts to visual resources due to the residential communities located upslope and overlook the alternative project sites. Equally as important, the need for an additional 22-37 new high voltage transmission towers and electrical conductors installed over a distance of five linear miles could result in immitigable impacts to visual resources. It follows, that none of the alternative sites would be preferable to the proposed PPEC from an environmental standpoint.

Staff also concludes that although the combined-cycle technology would likely reduce the impacts to air quality, it is not a feasible alternative to the proposed simple-cycle combustion turbine because the combined-cycle technology cannot meet a key project objective – to provide quick start capability for peak demand periods and to mitigate for grid instability caused by the intermittency of renewable energy generation.

After evaluating alternative electrical generation technologies and applying the screening criteria, staff has determined many of the alternative technologies evaluated in this section to be viable technologies for other applications and or other locations but none were determined to be environmentally preferred alternatives for the proposed PPEC. This conclusion was due in part to the applicant proposing to use an efficient electrical generation technology in developing the PPEC on a recently graded site that has the proper zoning and some major utilities already installed. Additionally, the proposed site is located 1,000 feet away from an existing electrical substation. Further, although there were not any environmental impacts to water resources, the applicant has refined the PPEC during the environmental review process to reduce the proposed water use by 17% and also reduce potential impacts that could arise from constructing the underground natural gas line.

REFERENCES

PPEC 2011a – Pio Pico Energy Center, LLC / G. Chandler (tn 59646). Application for Certification Volume 1 & 2, dated February 9, 2011. Submitted to CEC/Docket Unit on February 9, 2011.

PPEC 2011d – Pio Pico Energy Center, LLC (tn 60177). Data Adequacy Supplement, dated April 1, 2011. Submitted to CEC/Docket Unit on April 1, 2011.

PPEC 2011h – Pio Pico Energy Center, LLC / M. Foster (tn 61017). Pio Pico Energy Center LLC's AFC Refinement, dated June 8, 2011. Submitted to CEC/Docket Unit on June 8, 2011.

PPEC 2011i – Pio Pico Energy Center, LLC / M. Foster (tn 61348). California Independent System Operator's Cluster 2 Phase 1 Interconnection Study Report, dated July 11, 2011. Submitted to CEC / Docket Unit on July 11, 2011.

PPEC 2011p – Pio Pico Energy Center, LLC / K. Hellwig (tn 62192). Supplemental Responses to Data Requests Relating to Water Resources, Land Use, Visual Resources and Biological Resources, dated September 13, 2011. Submitted to CEC/Docket Unit on September 13, 2011.

PPEC 2011s – Pio Pico Energy Center, LLC/M. Foster (tn 62652). Application for Certification Refinement – Enhanced Water Treatment System, dated October 27, 2011. Submitted to CEC/Docket Unit on October 27, 2011.

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ALTERNATIVES, APPENDIX A
AIR QUALITY ANALYSIS OF ALTERNATIVE GENERATION TECHNOLOGIES

Wenjun Qian

TECHNOLOGIES

The Pio Pico Energy Center (PPEC) is a proposed simple-cycle power generation project that would consist of three General Electric LMS100 natural gas-fired combustion turbine generators (CTG). The total net generating capacity would be 300 megawatts (MWs), with each CTG capable of generating 100 megawatts. Given that the CTGs are proposed to be installed in simple cycle configuration, it is likely that the project will be operated or dispatched as a peaking power plant. However, each CTG is permitted to operate 4,335 hours, or at an annual capacity factor of 49 percent.

Staff compared the air quality emissions and impacts from the PPEC with the following two alternative technologies:

The first technology is the natural gas-fired reciprocating Wartsila engines that have been proposed to be used in the Quail Brush Generation Project (eleven natural gas-fired reciprocating Wartsila engines generating 9.3 megawatts each, or 100-megawatt (MW) intermediate/peaking load electrical generation). The Wartsila technology comparison project would provide 10 minute startups, and dispatch in increments of 5 to 10 percent of its total capacity while maintaining a relatively constant efficiency across the entire load range. In this analysis, staff uses 33 reciprocating Wartsila engine generators (for a total of 306.9 MW) to approximate the characteristics of PPEC.

The other comparison technology is that used in the GWF Tracy Combined-Cycle Power Plant (314 MW combined-cycle power plant consisting of two GE Frame 7EA 84.4 MW CTGs; two duct fired heat recovery steam generators (HRSGs); and a 145 MW steam turbine generator [STG]). The GWF Tracy Combined-Cycle Power Plant was selected for this analysis because its capacity is similar to that of PPEC and was approved fairly recently (March 2010). However, it may not be able to match the PPEC startup time, and it was permitted for 8000 hours per year so total annual emissions and impacts are modified in the analysis which follows so that the technologies can be somewhat comparable.

For comparison purposes, staff assumed the same capacity factors for all three technologies.

EMISSIONS CALCULATIONS AND ASSUMPTIONS USED IN AIR DISPERSION MODELING

The maximum hourly emissions for PPEC, Wartsila engines, and combined-cycle technology are listed in Table 1. The PPEC project includes the emissions from three CTGs and the partial dry cooling tower as proposed. For the other two technologies, in addition to the Wartsila engines and CTGs, staff added other emitting sources according to those included in the Quail Brush Generation Project and GWF Tracy Combined-Cycle Power Plant. For the Wartsila engine technology, staff added 3 fuel gas heaters, 3 warm start heaters, and a fire pump. For the combined-cycle technology, staff used the same additional sources (an auxiliary boiler, a wet surface air cooler, a fire pump, and an emergency generator) as those in the GWF Tracy Combined-Cycle Power Plant.

During normal operating conditions, the 33 Wartsila engines would give higher emissions than three simple-cycle CTGs of PPEC. On the other hand, two CTGs with combined-cycle technology during normal operation (even with duct burner firing) from GWF Tracy would have lower emission rates than three simple-cycle CTGs of PPEC during normal operation. If all the 33 Wartsila engines startup and shutdown simultaneously, emissions of every pollutant are higher than those from three simple-cycle CTGs of PPEC in startup or shutdown mode simultaneously. The combined-cycle technology has higher NOx and CO emissions but lower VOC, PM10/PM2.5, and SOx emissions during startup than those from all three simple-cycle CTGs of PPEC in startup or shutdown mode simultaneously.

The maximum daily emissions from PPEC (listed in Table 2) are based on 4 hours of startup, 4 hours of shutdown mode and 16 hours of full load operation. Maximum annual emissions (Table 3) are calculated based on 500 hours in startup mode, 500 hours in shutdown mode, and 3,335 hours per year at full-load operation under average conditions for all three CTGs.

Staff compared the emissions from the alternative technologies based on the same or a similar operating scenario as that for PPEC. The maximum daily emissions from 33 Wartsila engines are based on 1 hour in cold start mode, 3 hours in warm start mode, 4 hours in shutdown mode, and 16 hours at 100 percent load steady state operation. The maximum annual emissions from the 33 Wartsila engines are based on 375 hours in cold start mode, 125 hours in warm start mode, 500 hours in shutdown mode, and 3,335 hours in full load operation mode. The ratio between the hours in cold start and warm start modes is based on that for the Quail Brush Generation Project. The emissions and operating parameters of other sources are also based on those used in the Quail Brush Generation Project: daily emissions of fuel gas heaters and warm start heaters are based on 24 hours of operation. Daily emission of the fire pump is based on 1 hour of operation per day. Annual emissions of fuel gas heaters are based on 4,232 hours of operation. Annual emissions of warm start heaters are based on 4,928 hours of operation. Annual emissions from the fire pump are based on 50 hours of operation.

On the other hand, the startups of the GWF Tracy Combined-Cycle Power Plant would take more than an hour to complete: 180 min for cold start, 118 min for warm start, and 61 min for hot start, suggesting it is not really a comparable technology to PPEC. However, Staff considered this factor and tried to match the combined cycle operation to the number of startups/shutdowns of PPEC as closely as possible. For the maximum daily emissions, staff assumed 1 cold startup, 3 hot startups, 4 shutdowns, and 15.35 hours of operation at 15°F with evaporative coolers operating and duct burners firing. For the maximum annual emissions, staff assumed 38 cold startups, 76 warm startups, 386 hot startups, 500 shutdowns, 3,335 hours of operation at 59°F with evaporative coolers operating and duct burners firing. The ratio between the cold, warm, and hot startups is based on that used in the GWF Tracy Combined-Cycle Power Plant. The emissions and operating parameters of other sources are also based on those for the GWF Tracy Combined-Cycle Power Plant: daily emissions for the fire pump and emergency standby generator engine are based on a very conservative assumption with 24 hours of operation. Daily emissions from the WSAC (Wet Surface Air Cooler) and auxiliary boiler are also based on 24 hours of operation. Annual emissions for the fire pump and emergency standby generator engine are shown for 50 hours of operation for routine testing and maintenance. Annual emissions from WSAC and auxiliary boiler are based on 4,000 hours of operation.

Maximum daily and annual emissions of all pollutants from the Wartsila engine technology are higher than those of PPEC. This is due to the higher emissions from the total 33 Wartsila engines during both startup/shutdown and normal operation modes than the simple-cycle technology of PPEC. Maximum daily emissions of NOx and CO are higher from the combined-cycle technology because it has higher emission rates of NOx and CO during cold startup and shutdown. Maximum annual emissions of all pollutants from the combined-cycle technology are lower than the simple-cycle technology mainly because the combined-cycle technology has lower hourly emissions during normal operation.

IMPACTS

Air quality impacts are determined using an air dispersion model (AERMOD) and local meteorology to determine ground-level pollutant concentrations downwind of the facilities. Included in the analysis are factors such as emissions rates, plume rise and stack height. Project impacts are added to base-line (background) values to obtain totals that are then compared to applicable ambient air quality standards.

Staff used the project setup, such as receptor locations, terrain heights, meteorology, and background data from the PPEC modeling files. For the simple-cycle technology of PPEC, staff used the same impact results in the PSA of PPEC. For the other two alternative technologies, staff placed the emitting sources within the project boundary of PPEC and modeled the impacts with the PPEC project setup. The modeling assumptions for the Wartsila engine technology are based on the AFC of Quail Brush

Generation Project[4]. For this analysis, staff adopted all the assumptions including the 0.0115 in-stack NO_2/NOx ratio. If a higher in-stack NO_2/NOx ratio is found later in the Quail Brush Generation Project, the impact of NO_2 from the Wartsila engine technology would be even higher than what staff has modeled in this analysis.

The modeled project impacts from all three technologies are listed in Table 4. The impacts from the 33 Wartsila engines are higher than those from the simple-cycle CTGs of PPEC. The reason for the higher impacts is because of the higher hourly, daily, and annual emissions from the total 33 of the Wartsila engines. The other sources such as fire pump and heaters play a minor role in determining the total project impact.

On the other hand, impacts from the combined-cycle CTGs are also higher than those from the simple-cycle CTGs of PPEC even though some of the emissions are lower than those from the simple-cycle technology. Staff took a close look at the stack parameters in the modeling for these different technologies. Staff found that the reason for higher impacts from the combined-cycle CTGs is because the air plume exit temperatures and exit velocities from the stack tops are much lower than those from the simple-cycle CTGs or the Wartsila engines. The worst case modeled impacts from the combined-cycle CTGs are based on an exit temperature of 365.37 degrees K (Kelvin) and exit velocity of 9.754 m/s. For the simple-cycle CTGs of PPEC, the lowest exit temperature is 674 K and the slowest exit velocity is 19.86 m/s. The Wartsila engines are modeled with either the combination of 663.15 K and 24.983 m/s or the combination of 712.039 K and 14.771 m/s. Less buoyant air plumes from the combined-cycle CTGs will have greater impact closer to the stacks where there hasn't been enough time and distance for dispersion of the plumes.

Staff also noticed that for the combined cycle technology, the maximum annual impacts and 24-hour PM10/PM2.5 impacts are mainly determined by the auxiliary boiler. However, the difference in the modeled impacts due to the auxiliary boiler and CTGs is small compared to the limiting standards (5 to 6 percent). For comparison purposes, Staff listed the impacts of the combined cycle technology into 3 source groups in Table 4: impacts due to CTGs only, impacts due to an auxiliary boiler, and impacts due to all sources. The auxiliary boiler exhaust has a low exit temperature of 421 K and slow exit velocity of 5.8 m/s which leads to maximum impacts on the fence line. On the other hand, the CTGs still dominate the short term impacts because the high startup emissions play a major role in determining the maximum short term impacts.

In addition to the existing violations of 24-hour and annual PM10 and annual PM2.5 standards, there would be additional violations from the two alternative technologies. The 33 Wartsila engines would cause new violation of 24-hour PM2.5 and federal 1-hour NO_2 standard even if the modeling assumption of pairing the worst project impact and worst background is relaxed and the modeled impacts and background are paired temporally (daily for PM2.5 and hourly for NO_2). The combined-cycle CTGs as modeled would cause new violations of state and federal 1-hour NO_2 standards. However, these

[4] Staff still hasn't signed off on the Quail Brush applicant's modeling protocol which assumes a low value of 0.0115 for the in-stack NO_2/NOx ratio for the Wartsila engines.

alternative technologies are not proposed for this site but rather are modeled at this site and shown for comparison purposes. If different meteorology, terrain, and background data are used as inputs to the modeling for different sites, the results could be quite different even if the same emitting sources are used. The 11 instead of 33 Wartsila engines as proposed for Quail Brush will be evaluated against all ambient air quality standards at that site, just as the combined cycle technology was evaluated and found to comply with ambient air quality standards at the Tracy site.

CONCLUSIONS

Staff compared the simple-cycle technology proposed for Pio Pico with two other alternative technologies: reciprocating Wartsila engine technology and combined-cycle technology. For comparison purposes of this analysis, staff assumed the same operating capacity factor for all three technologies, while in reality a combined-cycle power plant would not match the quick start times of PPEC or the Warsilas, and would also likely be operated at a much higher annual capacity factor. Based on this analysis, staff concludes that:

1. With the same capacity, Wartsila engines have higher maximum hourly, daily, and annual emissions than the simple-cycle CTGs of PPEC.

2. With similar capacity, combined-cycle CTGs have higher emissions of NOx and CO during startups and lower emission rates of all pollutants during normal operations compared to simple-cycle CTGs of PPEC. Annual emissions of all pollutants from combined-cycle CTGs are lower than simple-cycle CTGs of PPEC assuming same operating capacity factor.

3. Wartsila engines have higher modeled air impacts for all pollutants than those from the simple-cycle CTGs of PPEC and as modeled at the Pio Pico site would cause new violations of 24-hour PM2.5 and federal 1-hour NO_2 standard.

4. Combined cycle CTGs, with necessary auxiliary sources such as auxiliary boiler, have higher modeled air impacts of all pollutants because of lower exit temperature and slower exit velocity. As modeled at the Pio Pico site, combined cycle CTGs would cause new violations of both state and federal 1-hour NO_2 standards because of high startup emissions.

Table 1
Maximum Hourly Emissions during Routing Operation (pounds per hour [lb/hour])

Source	NOx	VOC	PM10/PM2.5	CO	SOx
PPEC[1]					
Each CTG (normal operation)	8.18	2.28	5.5	7.97	1.9
Each CTG (startup or shutdown)	26.6	5.81	5.5	53.5	1.9
Cooling Tower	--	--	0.7	--	--
Maximum Total	**79.9**	**19.6**	**17.2**	**160.5**	**5.7**
Wartsila Engines[2]					
Each engine (steady state, 100% load)	1.3	1.6	1.4	1.6	0.3
Each engine (w/startup & shutdown)	9.5	7.5	2.4	13.4	0.3
Fuel Gas Heater (each)	0.2	0.2	0.03	0.4	0.00
Warm Start Heater (each)	0.2	0.2	0.03	0.4	0.00
Subtotal (33 engines)	313.2	248.2	78.5	443.5	9.2
Subtotal (3 Fuel Gas Heaters)	0.6	0.5	0.1	1.1	0.01
Subtotal (3 Warm Start Heaters)	0.6	0.5	0.1	1.1	0.01
Fire Pump	0.9	0.03	0.03	0.3	0.002
Maximum Total	**315.2**	**249.2**	**78.7**	**446.0**	**9.3**
Combined Cycle[3]					
Source	**NOx**	**VOC**	**PM10/PM2.5**	**CO**	**SOx**
Each Combustion Turbine (maximum lb/hr with duct burner firing)	10.3	3.22	5.8	6	2.63
Each Combustion Turbine (maximum lb/hr without duct burner firing)	8.1	1.13	4.4	3.9	2.02
Both Combustion Turbines (maximum lb/hr combined startup)	399	11	9.4	375	4.9
Auxiliary Boiler	0.62	0.43	0.6	3.15	0.16
Wet Surface Air Cooler	--	--	0.2	--	--
Fire Pump Engine	1.7	0.1	0.076	1.52	0.003
Emergency Standby Generator	4.9	0.042	0.03	0.12	0.005
Maximum Total	**406.2**	**11.6**	**10.3**	**379.8**	**5.1**

1. Emissions of PPEC are based on Air Quality PSA and PDOC for PPEC (San Diego APCD 2011).
2. Emissions of Wartsila engines and corresponding heaters and fire pump are based on AFC of Quail Brush Generation Project (Quail Brush GenCo 2011).
3. Emissions of combined-cycle technology are based on FSA of GWF Tracy Combined-Cycle Power Plant (CEC 2009).

Table 2
Maximum Daily Emissions during Routing Operation (pounds per day [lb/day])

Source	NOx	VOC	PM10/PM2.5	CO	SOx
PPEC[1]					
Each CTG	288.1	79.2	132.0	428.9	45.6
Cooling Tower	--	--	15.8	--	--
Total	**864.3**	**237.5**	**411.8**	**1,286.6**	**136.8**
Wartsila Engines[2]					
Each engine	46.1	48.4	38.1	52.5	6.2
Fuel Gas Heater (each)	4.6	3.8	0.7	8.6	0.1
Warm Start Heater (each)	4.6	3.8	0.7	8.6	0.1
Subtotal (33 engines)	1,522.4	1,597.3	1,258.1	1,731.6	205.5
Subtotal (3 Fuel Gas Heaters)	13.9	11.5	2.0	25.9	0.2
Subtotal (3 Warm Start Heaters)	13.9	11.5	2.0	25.9	0.2
Fire Pump	0.9	0.03	0.03	0.3	0.002
Total	**1,551.0**	**1,620.4**	**1,262.2**	**1,783.8**	**205.8**
Combined Cycle[3]					
Combustion Turbine #1	1,036.6	75.4	121.0	1,549.6	52.4
Combustion Turbine #2	1,036.6	75.4	121.0	1,549.6	52.4
Auxiliary Boiler	15.0	10.2	14.3	75.5	3.8
Wet Surface Air Cooler	--	--	4.8	--	--
Fire Pump Engine	41.0	2.4	1.8	36.0	0.1
Emergency Standby Generator	117.0	1.0	0.7	3.0	0.1
Total	**2,246.2**	**164.5**	**263.7**	**3,213.7**	**108.8**

1. Emissions of PPEC are based on Air Quality PSA and PDOC for PPEC (San Diego APCD 2011).
2. Emissions of Wartsila engines and corresponding heaters and fire pump are based on AFC of Quail Brush Generation Project (Quail Brush GenCo 2011).
3. Emissions of combined-cycle technology are based on FSA of GWF Tracy Combined-Cycle Power Plant (CEC 2009).

Table 3
Maximum Annual Emissions during Routing Operation (tons per year [tpy])

Source	NOx	VOC	PM10/PM2.5	CO	SOx
PPEC[1]					
Each CTG	23.5	6.5	11.9	32.1	4.1
Cooling Tower	--	--	1.4	--	--
Total	**70.4**	**19.4**	**37.2**	**96.4**	**12.4**
Wartsila Engines[2]					
Each engine	4.5	4.6	3.3	5.7	0.6
Fuel Gas Heater (each)	0.4	0.3	0.1	0.8	5.1E-03
Warm Start Heater (each)	0.5	0.4	0.1	0.9	5.9E-03
Subtotal (33 engines)	149.2	153.1	107.6	187.4	18.5
Subtotal (3 Fuel Gas Heaters)	1.2	1.0	0.2	2.3	1.5E-02
Subtotal (3 Warm Start Heaters)	1.4	1.2	0.2	2.7	1.8E-02
Fire Pump	2.2E-02	7.5E-04	7.5E-04	8.0E-03	5.3E-05
Total	**151.8**	**155.3**	**108.0**	**192.4**	**18.6**
Combined Cycle[3]					
Combustion Turbine #1	33.9	5.7	9.2	39.7	2.2
Combustion Turbine #2	33.9	5.7	9.2	39.7	2.2
Auxiliary Boiler	1.2	0.9	1.2	6.3	0.1
Wet Surface Air Cooler	--	--	0.1	--	--
Fire Pump Engine	4.3E-02	2.6E-03	1.9E-03	3.8E-02	7.5E-05
Emergency Standby Generator	1.2E-01	1.1E-03	7.5E-04	3.1E-03	1.2E-04
Total	**69.2**	**12.3**	**19.7**	**85.6**	**4.5**

1. Emissions of PPEC are based on Air Quality PSA and PDOC for PPEC (San Diego APCD 2011).
2. Emissions of Wartsila engines and corresponding heaters and fire pump are based on AFC of Quail Brush Generation Project (Quail Brush GenCo 2011).
3. Emissions of combined-cycle technology are based on FSA of GWF Tracy Combined-Cycle Power Plant (CEC 2009).

Table 4
Comparison of Routine Operation Maximum Impacts (µg/m^3)

Pollutant	Averaging Time	Modeled Impact			Background	Total Impact			Limiting Standard	Percent of Standard		
		PPEC	Wartsila Engines	Combined Cycle[1] CTGs Aux Boiler All Sources		PPEC	Wartsila Engines	Combined Cycle CTGs Aux Boiler All Sources		PPEC	Wartsila Engines	Combined Cycle CTGs Aux Boiler All Sources
PM10	24 hour	2	39	3.6 6.1 7	**57**	**59**	**96**	**61** **63** **64**	**50**	**118**	**192**	**121** **126** **127**
	Annual	0.2	2	0.17 0.79 0.81	**26.7**	**27**	**29**	**27** **27** **28**	**20**	**135**	**146**	**134** **137** **138**
PM2.5	24 hour[2]	--	--	--	--	26	**39**	26 27 28	35	74	**112**	74 77 79
	Annual	0.2	2.5	0.17 0.79 0.81	**12.5**	**13**	**15**	**13** **13** **13**	**12**	**107**	**125**	**106** **111** **111**
CO	1 hour	268	2,739	1,151 NA 1,170	3,565	3,833	6,304	4,716 NA 4,735	23,000	17	27	21 NA 21
	8 hour	64	190	347 NA 351	2,489	2,553	2,679	2,836 NA 2,840	10,000	26	27	28 NA 28
NO_2	1 hour (state)	133	167	303 NA 328	154	287	321	**457** NA **482**	**339**	85	95	**135** NA **142**
	1 hour (federal)[3]	--	--	--	--	138	**199**	**311** NA **316**	**188**	73	**106**	**165** NA **168**
	Annual	0.3	4	0.6 0.8 1	29	29	33	30 30 30	57	51	57	53 53 53

Pollutant	Averaging Time	Modeled Impact			Background	Total Impact			Limiting Standard	Percent of Standard		
		PPEC	Wartsila Engines	Combined Cycle[1] CTGs Aux Boiler All Sources		PPEC	Wartsila Engines	Combined Cycle CTGs Aux Boiler All Sources		PPEC	Wartsila Engines	Combined Cycle CTGs Aux Boiler All Sources
	1 hour	8	56	16 NA 16	31	37	87	47 NA 47	196	19	44	24 NA 24
	24 hour	1.0	4.8	1.7 NA 1.7	18.2	19	23	20 NA 20	105	18	22	19 NA 19
SO_2	Annual	<0.1	0.42	0.04 0.07 0.07	10.5	11	11	11 11 11	80	13	14	13 13 13

1. The impacts of the combined cycle are listed for 3 separate groups of sources. The upper numbers represent the impacts due to the two CTGs, the middle numbers represent the impacts due to the auxiliary boiler, and the lower numbers represent the impacts due to all the sources.
2. The total impacts of 24-hour PM2.5 are shown as 3-year average of the annual 98th percentile of paired-sum of 24-hour modeled impacts and daily background data.
3. The total impacts of 1-hour NO_2 are shown as 3-year average of the 98th percentile of the yearly distribution of daily maximum paired-sum of 1-hour modeled impacts and hourly NO_2 background data.

REFERENCES

CEC 2009, Final Staff Assessment, GWF Tracy Combined Cycle Power Plant Project (08-AFC-7), dated October 30, 2009.

Quail Brush GenCo 2011, Application for Certification Volume I and II (TN 62026), dated August 25, 2011.

San Diego APCD 2011, Pio Pico Energy Center Project (11-AFC-01) San Diego Air Pollution Control District's Publication of the Preliminary Determination of Compliance (TN 63192), dated December 20, 2011.

ACRONYMS

CO: carbon monoxide
NO_2: nitrogen dioxide
NOx: nitrogen oxides
PM10: particulate matter less than 10 micrometers in diameter
PM2.5: particulate matter less than 2.5 micrometers in diameter
SO_2: sulfur dioxide
SOx: sulfur oxides
VOC: volatile organic compound

GENERAL CONDITIONS INCLUDING COMPLIANCE MONITORING AND CLOSURE PLAN

Dale Rundquist

INTRODUCTION

The project's General Compliance Conditions of Certification, including Compliance Monitoring and Closure Plan (Compliance Plan) have been established as required by Public Resources Code section 25532. The plan provides a means for assuring that the facility is constructed, operated, and closed in compliance with public health and safety, environmental, and other applicable regulations, guidelines, and conditions adopted or established by the California Energy Commission and specified in the written decision on the Application for Certification or otherwise required by law.

The Compliance Plan is composed of elements that:

- set forth the duties and responsibilities of the Compliance Project Manager (CPM), the project owner, delegate agencies, and others;
- set forth the requirements for handling confidential records and maintaining the compliance record;
- state procedures for settling disputes and making post-certification changes;
- state the requirements for periodic compliance reports and other administrative procedures that are necessary to verify the compliance status for all Energy Commission approved conditions of certification;
- establish requirements for facility closure plans; and
- specify conditions of certification for each technical area containing the measures required to mitigate any and all potential adverse project impacts associated with construction, operation and closure below a level of significance. Each specific condition of certification also includes a verification provision that describes the method of assuring that the condition has been satisfied.

DEFINITIONS

The following terms and definitions are used to establish when Conditions of Certification are implemented.

PRE-CONSTRUCTION SITE MOBILIZATION

Site mobilization is limited preconstruction activities at the site to allow for the installation of fencing, construction trailers, construction trailer utilities, and construction trailer parking at the site. Limited ground disturbance, grading, and trenching associated with the above mentioned pre-construction activities is considered part of site mobilization. Walking, driving or parking a passenger vehicle, pickup truck and/or light vehicles is allowable during site mobilization.

CONSTRUCTION

Onsite work to install permanent equipment or structures for any facility.

Ground Disturbance

Construction-related ground disturbance refers to activities that result in the removal of top soil or vegetation at the site beyond site mobilization needs, and for access roads and linear facilities.

Grading, Boring, and Trenching

Construction-related grading, boring, and trenching refers to activities that result in subsurface soil work at the site and for access roads and linear facilities, e.g., alteration of the topographical features such as leveling, removal of hills or high spots, moving of soil from one area to another, and removal of soil.

Notwithstanding the definitions of ground disturbance, grading, boring, and trenching above, construction does **not** include the following:

1. the installation of environmental monitoring equipment;

2. a soil or geological investigation;

3. a topographical survey;

4. any other study or investigation to determine the environmental acceptability or feasibility of the use of the site for any particular facility; and

5. any work to provide access to the site for any of the purposes specified in "Construction" 1, 2, 3, or 4 above.

START OF COMMERCIAL OPERATION

For compliance monitoring purposes, "commercial operation" begins after the completion of start-up and commissioning, when the power plant has reached reliable steady-state production of electricity at the rated capacity. At the start of commercial operation, plant control is usually transferred from the construction manager to the plant operations manager.

COMPLIANCE PROJECT MANAGER RESPONSIBILITIES

The Compliance Project Manager (CPM) shall oversee the compliance monitoring and is responsible for:

1. ensuring that the design, construction, operation, and closure of the project facilities are in compliance with the terms and conditions of the Energy Commission Decision;

2. resolving complaints;

3. processing post-certification changes to the conditions of certification, project description (petition to amend), and ownership or operational control (petition for change of ownership) (See instructions for filing petitions);

4. documenting and tracking compliance filings; and

5. ensuring that compliance files are maintained and accessible.

The CPM is the contact person for the Energy Commission and will consult with appropriate responsible agencies, Energy Commission, and staff when handling disputes, complaints, and amendments.

All project compliance submittals are submitted to the CPM for processing. Where a submittal required by a condition of certification requires CPM approval, the approval will involve all appropriate Energy Commission staff and management. All submittals must include searchable electronic versions (pdf or MS Word files).

PRE-CONSTRUCTION AND PRE-OPERATION COMPLIANCE MEETING

The CPM usually schedules pre-construction and pre-operation compliance meetings prior to the projected start-dates of construction, plant operation, or both. The purpose of these meetings is to assemble both the Energy Commission's and project owner's technical staff to review the status of all pre-construction or pre-operation requirements contained in the Energy Commission's conditions of certification. This is to confirm that all applicable conditions of certification have been met, or if they have not been met, to ensure that the proper action is taken. In addition, these meetings ensure, to the extent possible, that Energy Commission conditions will not delay the construction and operation of the plant due to oversight and to preclude any last minute, unforeseen issues from arising. Pre-construction meetings held during the certification process must be publicly noticed unless they are confined to administrative issues and processes.

ENERGY COMMISSION RECORD

The Energy Commission shall maintain the following documents and information as a public record, in either the Compliance file or Dockets file, for the life of the project (or other period as required):

1. all documents demonstrating compliance with any legal requirements relating to the construction and operation of the facility;

2. all monthly and annual compliance reports filed by the project owner;

3. all complaints of noncompliance filed with the Energy Commission; and

4. all petitions for project or condition of certification changes and the resulting staff or Energy Commission action.

PROJECT OWNER RESPONSIBILITIES

The project owner is responsible for ensuring that the compliance conditions of certification and all other conditions of certification that appear in the Commission Decision are satisfied. The compliance conditions regarding post-certification changes specify measures that the project owner must take when requesting changes in the project design, conditions of certification, or ownership. Failure to comply with any of the conditions of certification or the compliance conditions may result in reopening of the

case and revocation of Energy Commission certification; an administrative fine; or other action as appropriate. A summary of the Compliance Conditions of Certification is included as **Compliance Table 1** at the conclusion of this section.

COMPLIANCE CONDITIONS OF CERTIFICATION

Unrestricted Access (COMPLIANCE-1)

The CPM, responsible Energy Commission staff, and delegated agencies or consultants shall be guaranteed and granted unrestricted access to the power plant site, related facilities, project-related staff, and the records maintained on-site for the purpose of conducting audits, surveys, inspections, or general site visits. Although the CPM will normally schedule site visits on dates and times agreeable to the project owner, the CPM reserves the right to make unannounced visits at any time.

Compliance Record (COMPLIANCE-2)

The project owner shall maintain project files on-site or at an alternative site approved by the CPM for the life of the project, unless a lesser period of time is specified by the conditions of certification. The files shall contain copies of all “as-built” drawings, documents submitted as verification for conditions, and other project-related documents.

Energy Commission staff and delegate agencies shall, upon request to the project owner, be given unrestricted access to the files maintained pursuant to this condition.

Compliance Verification Submittals (COMPLIANCE-3)

Each condition of certification is followed by a means of verification. The verification describes the Energy Commission’s procedure(s) to ensure post-certification compliance with adopted conditions. The verification procedures, unlike the conditions, may be modified as necessary by the CPM.

Verification of compliance with the conditions of certification can be accomplished by the following:

1. monthly and/or annual compliance reports, filed by the project owner or authorized agent, reporting on work done and providing pertinent documentation, as required by the specific conditions of certification;

2. appropriate letters from delegate agencies verifying compliance;

3. Energy Commission staff audits of project records; and/or

4. Energy Commission staff inspections of work, or other evidence that the requirements are satisfied.

Verification lead times associated with start of construction may require the project owner to file submittals during the certification process, particularly if construction is planned to commence shortly after certification.

A cover letter from the project owner or authorized agent is required for all compliance submittals and correspondence pertaining to compliance matters. **The cover letter subject line shall identify the project by AFC number, the appropriate condition(s) of certification by condition number(s), and a brief description of the subject of the submittal**. The project owner shall also identify those submittals **not** required by a condition of certification with a statement such as: "This submittal is for information only and is not required by a specific condition of certification." When submitting supplementary or corrected information, the project owner shall reference the date of the previous submittal and CEC submittal number.

The project owner is responsible for the delivery and content of all verification submittals to the CPM, whether such condition was satisfied by work performed by the project owner or an agent of the project owner.

All hardcopy submittals shall be addressed as follows:

Compliance Project Manager
(11-AFC-1C)
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814

Those submittals shall be accompanied by a searchable electronic copy, on a CD or by e-mail, as agreed upon by the CPM.

If the project owner desires Energy Commission staff action by a specific date, that request shall be made in the submittal cover letter and shall include a detailed explanation of the effects on the project if that date is not met.

Pre-Construction Matrix and Tasks Prior to Start of Construction (COMPLIANCE-4)

Prior to commencing construction, a compliance matrix addressing only those conditions that must be fulfilled before the start of construction shall be submitted by the project owner to the CPM. This matrix will be included with the project owner's first compliance submittal or prior to the first pre-construction meeting, whichever comes first. It will be submitted in the same format as the compliance matrix described below.

Construction shall not commence until the pre-construction matrix is submitted, all pre-construction conditions have been complied with, and the CPM has issued a letter to the project owner authorizing construction. Various lead times for submittal of compliance verification documents to the CPM for conditions of certification are established to allow sufficient staff time to review and comment and, if necessary, allow the project owner to revise the submittal in a timely manner. This will ensure that project construction may proceed according to schedule.

Failure to submit compliance documents within the specified lead-time may result in delays in authorization to commence various stages of project development.

If the project owner anticipates commencing project construction as soon as the project is certified, it may be necessary for the project owner to file compliance submittals prior

to project certification. Compliance submittals should be completed in advance where the necessary lead time for a required compliance event extends beyond the date anticipated for start of construction. The project owner must understand that the submittal of compliance documents prior to project certification is at the owner's own risk. Any approval by Energy Commission staff is subject to change, based upon the Commission Decision.

Compliance Reporting

There are two different compliance reports that the project owner must submit to assist the CPM in tracking activities and monitoring compliance with the terms and conditions of the Energy Commission Decision. During construction, the project owner or authorized agent will submit Monthly Compliance Reports. During operation, an Annual Compliance Report must be submitted. These reports, and the requirement for an accompanying compliance matrix, are described below. The majority of the conditions of certification require that compliance submittals be submitted to the CPM in the monthly or annual compliance reports.

Compliance Matrix (COMPLIANCE-5)

A compliance matrix shall be submitted by the project owner to the CPM along with each monthly and annual compliance report. The compliance matrix is intended to provide the CPM with the current status of all conditions of certification in a spreadsheet format. The compliance matrix must identify:

1. the technical area;

2. the condition number;

3. a brief description of the verification action or submittal required by the condition;

4. the date the submittal is required (e.g., 60 days prior to construction, after final inspection, etc.);

5. the expected or actual submittal date;

6. the date a submittal or action was approved by the Chief Building Official (CBO), CPM, or delegate agency, if applicable;

7. the compliance status of each condition, e.g., "not started," "in progress" or "completed" (include the date); and

8. if the condition was amended, the date of the amendment.

Satisfied conditions shall be placed at the end of the matrix.

Monthly Compliance Report (COMPLIANCE-6)

The first Monthly Compliance Report is due one month following the Energy Commission business meeting date upon which the project was approved, unless otherwise agreed to by the CPM. The first Monthly Compliance Report shall include the AFC number and an initial list of dates for each of the events identified on the **Key**

Events List. The Key Events List form is found at the end of these General Conditions.

During pre-construction and construction of the project, the project owner or authorized agent shall submit an original and an electronic searchable version of the Monthly Compliance Report within 10 working days after the end of each reporting month. Monthly Compliance Reports shall be clearly identified for the month being reported. The reports shall contain, at a minimum:

1. a summary of the current project construction status, a revised/updated schedule if there are significant delays, and an explanation of any significant changes to the schedule;

2. documents required by specific conditions to be submitted along with the Monthly Compliance Report. Each of these items must be identified in the transmittal letter, as well as the conditions they satisfy and submitted as attachments to the Monthly Compliance Report;

3. an initial, and thereafter updated, compliance matrix showing the status of all conditions of certification;

4. a list of conditions that have been satisfied during the reporting period, and a description or reference to the actions that satisfied the condition;

5. a list of any submittal deadlines that were missed, accompanied by an explanation and an estimate of when the information will be provided;

6. a cumulative listing of any approved changes to conditions of certification;

7. a listing of any filings submitted to, or permits issued by, other governmental agencies during the month;

8. a projection of project compliance activities scheduled during the next two months. The project owner shall notify the CPM as soon as any changes are made to the project construction schedule that would affect compliance with conditions of certification;

9. a listing of the month's additions to the on-site compliance file; and

10. a listing of complaints, notices of violation, official warnings, and citations received during the month, a description of the resolution of the resolved actions, and the status of any unresolved actions.

All sections, exhibits, or addendums shall be separated by tabbed dividers or as acceptable by the CPM.

Annual Compliance Report (COMPLIANCE-7)

After construction is complete, the project owner shall submit Annual Compliance Reports instead of Monthly Compliance Reports. The reports are for each year of commercial operation and are due to the CPM each year at a date agreed to by the

CPM. Annual Compliance Reports shall be submitted over the life of the project, unless otherwise specified by the CPM. Each Annual Compliance Report shall include the AFC number, identify the reporting period, and shall contain the following:

1. an updated compliance matrix showing the status of all conditions of certification (fully satisfied conditions do not need to be included in the matrix after they have been reported as completed);

2. a summary of the current project operating status and an explanation of any significant changes to facility operations during the year;

3. documents required by specific conditions to be submitted along with the Annual Compliance Report. Each of these items must be identified in the transmittal letter with the condition it satisfies, and submitted as attachments to the Annual Compliance Report;

4. a cumulative listing of all post-certification changes approved by the Energy Commission or cleared by the CPM;

5. an explanation for any submittal deadlines that were missed, accompanied by an estimate of when the information will be provided;

6. a listing of filings submitted to, or permits issued by, other governmental agencies during the year;

7. a projection of project compliance activities scheduled during the next year;

8. a listing of the year's additions to the on-site compliance file;

9. an evaluation of the on-site contingency plan for unplanned facility closure, including any suggestions necessary for bringing the plan up to date (see Compliance Conditions for Facility Closure addressed later in this section); and

10. a listing of complaints, notices of violation, official warnings, and citations received during the year, a description of the resolution of any resolved matters, and the status of any unresolved matters.

Confidential Information (COMPLIANCE-8)

Any information that the project owner deems confidential shall be submitted to the Energy Commission's Executive Director with an application for confidentiality pursuant to Title 20, California Code of Regulations, section 2505(a). Any information that is determined to be confidential shall be kept confidential as provided for in Title 20, California Code of Regulations, section 2501, et. seq.

Annual Energy Facility Compliance Fee (COMPLIANCE-9)

Pursuant to the provisions of Section 25806(b) of the Public Resources Code, the project owner is required to pay an annual compliance fee, which is adjusted annually. Current Compliance fee information is available on the Energy Commission's website http://www.energy.ca.gov/siting/filing_fees.html. You may also contact the CPM for the current fee information. The initial payment is due on the date of the Business Meeting

at which the Energy Commission adopts the final decision. All subsequent payments are due by July 1 of each year in which the facility retains its certification. The payment instrument shall be made payable to the California Energy Commission and mailed to: Accounting Office MS-02, California Energy Commission, 1516 9th St., Sacramento, CA 95814.

Reporting of Complaints, Notices, and Citations (COMPLIANCE-10)

Prior to the start of construction, the project owner must send a letter to property owners living within one mile of the project notifying them of a telephone number to contact project representatives with questions, complaints, or concerns. If the telephone is not staffed 24 hours per day, it shall include automatic answering with a date and time stamp recording. All recorded complaints shall be responded to within 24 hours. The telephone number shall be posted at the project site and made easily visible to passersby during construction and operation. The telephone number shall be provided to the CPM who will post it on the Energy Commission's web page at http://www.energy.ca.gov/sitingcases/power_plants_contacts.html.

Any changes to the telephone number shall be submitted immediately to the CPM, who will update the web page.

In addition to the monthly and annual compliance reporting requirements described above, the project owner shall report and provide copies to the CPM of all complaint forms, including noise and lighting complaints, notices of violation, notices of fines, official warnings, and citations within 10 days of receipt. Complaints shall be logged and numbered. Noise complaints shall be recorded on the form provided in the **NOISE** conditions of certification. All other complaints shall be recorded on the complaint form (Attachment A).

FACILITY CLOSURE

At some point in the future, the project will cease operation and close down. At that time, it will be necessary to ensure that the closure occurs in such a way that public health and safety and the environment are protected from adverse impacts. Although the project setting for this project does not appear, at this time, to present any special or unusual closure problems, it is impossible to foresee what the situation will be in 30 years or more when the project ceases operation. Therefore, provisions must be made that provide the flexibility to deal with the specific situation and project setting that exist at the time of closure. Laws, Ordinances, Regulations, and Standards (LORS) pertaining to facility closure are identified in the sections dealing with each technical area. Facility closure will be consistent with LORS in effect at the time of closure.

There are at least three circumstances in which a facility closure can take place: planned closure, unplanned temporary closure, and unplanned permanent closure**.**

CLOSURE DEFINITIONS

Planned Closure

A planned closure occurs when the facility is closed in an anticipated, orderly manner, at the end of its useful economic or mechanical life, or due to gradual obsolescence.

Unplanned Temporary Closure

An unplanned temporary closure occurs when the facility is closed suddenly and/or unexpectedly, on a short-term basis, due to unforeseen circumstances such as a natural disaster or an emergency.

Unplanned Permanent Closure

An unplanned permanent closure occurs if the project owner closes the facility suddenly and/or unexpectedly, on a permanent basis. This includes unplanned closure where the owner implements the on-site contingency plan. It can also include unplanned closure where the project owner fails to implement the contingency plan, and the project is essentially abandoned.

COMPLIANCE CONDITIONS FOR FACILITY CLOSURE

Planned Closure (COMPLIANCE-11)

In order to ensure that a planned facility closure does not create adverse impacts, a closure process that provides for careful consideration of available options and applicable laws, ordinances, regulations, standards, and local/regional plans in existence at the time of closure will be undertaken. To ensure adequate review of a planned project closure, the project owner shall submit a proposed facility closure plan to the Energy Commission for review and approval at least 12 months (or other period of time agreed to by the CPM) prior to the commencement of closure activities. The project owner shall file 120 copies (or other number of copies agreed upon by the CPM) of a proposed facility closure plan with the Energy Commission.

The plan shall:

1. identify and discuss any impacts and mitigation to address significant adverse impacts associated with proposed closure activities and to address facilities, equipment, or other project related remnants that will remain at the site;

2. identify a schedule of activities for closure of the power plant site, transmission line corridor, and all other appurtenant facilities constructed as part of the project;

3. identify any facilities or equipment intended to remain on site after closure, the reason, and any future use; and

4. address conformance of the plan with all applicable laws, ordinances, regulations, standards, and local/regional plans in existence at the time of facility closure, and applicable conditions of certification.

Prior to submittal of the proposed facility closure plan, a meeting shall be held between the project owner and the Energy Commission CPM for the purpose of discussing the specific contents of the plan.

In the event that there are significant issues associated with the proposed facility closure plan's approval, or if the desires of local officials or interested parties are inconsistent with the plan, the CPM shall hold one or more workshops and/or the Energy Commission may hold public hearings as part of its approval procedure.

As necessary, prior to or during the closure plan process, the project owner shall take appropriate steps to eliminate any immediate threats to public health and safety and the environment, but shall not commence any other closure activities until the Energy Commission approves the facility closure plan.

Unplanned Temporary Closure/On-Site Contingency Plan (COMPLIANCE-12)

In order to ensure that public health and safety and the environment are protected in the event of an unplanned temporary facility closure, it is essential to have an on-site contingency plan in place. The on-site contingency plan will help to ensure that all necessary steps to mitigate public health and safety impacts and environmental impacts are taken in a timely manner.

The project owner shall submit an on-site contingency plan for CPM review and approval. The plan shall be submitted no less than 60 days (or other time agreed to by the CPM) prior to commencement of commercial operation. The approved plan must be in place prior to commercial operation of the facility and shall be kept at the site at all times.

The project owner, in consultation with the CPM, will update the on-site contingency plan as necessary. The CPM may require revisions to the on-site contingency plan over the life of the project. In the annual compliance reports submitted to the Energy Commission, the project owner will review the on-site contingency plan, and recommend changes to bring the plan up to date. Any changes to the plan must be approved by the CPM.

The on-site contingency plan shall provide for taking immediate steps to secure the facility from trespassing or encroachment. In addition, for closures of more than 90 days, unless other arrangements are agreed to by the CPM, the plan shall provide for removal of hazardous materials and hazardous wastes, draining of all chemicals from storage tanks and other equipment, and the safe shutdown of all equipment. (Also see specific conditions of certification for the technical areas of **Hazardous Materials Management** and **Waste Management**)

In addition, consistent with requirements under unplanned permanent closure addressed below, the nature and extent of insurance coverage, and major equipment warranties must also be included in the on-site contingency plan. In addition, the status of the insurance coverage and major equipment warranties must be updated in the annual compliance reports.

In the event of an unplanned temporary closure, the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, or e-mail, within 24 hours and shall take all necessary steps to implement the on-site contingency plan. The project owner shall keep the CPM informed of the circumstances and expected duration of the closure.

If the CPM determines that an unplanned temporary closure is likely to be permanent, or for a duration of more than 12 months, a closure plan consistent with the requirements for a planned closure shall be developed and submitted to the CPM within 90 days of the CPM's determination (or other period of time agreed to by the CPM).

Unplanned Permanent Closure/On-Site Contingency Plan (COMPLIANCE-13)

The on-site contingency plan required for unplanned temporary closure shall also cover unplanned permanent facility closure. All of the requirements specified for unplanned temporary closure shall also apply to unplanned permanent closure.

In addition, the on-site contingency plan shall address how the project owner will ensure that all required closure steps will be successfully undertaken in the event of abandonment.

In the event of an unplanned permanent closure, the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, or e-mail within 24 hours and shall take all necessary steps to implement the on-site contingency plan. The project owner shall keep the CPM informed of the status of all closure activities.

A closure plan, consistent with the requirements for a planned closure, shall be developed and submitted to the CPM within 90 days of the permanent closure or another period of time agreed to by the CPM.

Post Certification Changes to the Energy Commission Decision: Amendments, Ownership Changes, Staff Approved Project Modifications and Verification Changes (COMPLIANCE-14)

The project owner must petition the Energy Commission pursuant to Title 20, California Code of Regulations, section 1769, in order to modify the project (including linear facilities) design, operation or performance requirements, and to transfer ownership or operational control of the facility. **It is the responsibility of the project owner to contact the CPM to determine if a proposed project change should be considered a project modification pursuant to section 1769.** Implementation of a project modification without first securing Energy Commission, or Energy Commission staff approval, may result in enforcement action that could result in civil penalties in accordance with section 25534 of the Public Resources Code.

A petition is required for **amendments** and for **staff approved project modifications** as specified below. Both shall be filed as a "Petition to Amend." Staff will determine if the change is significant or insignificant. For verification changes, a letter from the project owner is sufficient. In all cases, the petition or letter requesting a change should be submitted to the CPM, who will file it with the Energy Commission's Dockets Unit in accordance with Title 20, California Code of Regulations, section 1209.

The criteria that determine which type of approval and the process that applies are explained below. They reflect the provisions of Section 1769 at the time this condition was drafted. If the Commission's rules regarding amendments are amended, the rules in effect at the time an amendment is requested shall apply.

Amendment

The project owner shall petition the Energy Commission, pursuant to Title 20, California Code of Regulations, Section 1769(a), when proposing modifications to the project (including linear facilities) design, operation, or performance requirements. If a proposed modification results in deletion or change of a condition of certification, or makes changes that would cause the project not to comply with any applicable laws, ordinances, regulations, or standards the petition will be processed as a formal amendment to the final decision, which requires public notice and review of the Energy Commission staff analysis and approval by the full Commission. The petition shall be in the form of a legal brief and fulfill the requirements of Section 1769(a). Upon request, the CPM will provide a sample petition to use as a template.

Change of Ownership

Change of ownership or operational control also requires that the project owner file a petition pursuant to section 1769 (b). This process requires public notice and approval by the full Commission. The petition shall be in the form of a legal brief and fulfill the requirements of Section 1769(b). Upon request, the CPM will provide a sample petition to use as a template.

Staff Approved Project Modification

Modifications that do not result in deletions or changes to conditions of certification, that are compliant with laws, ordinances, regulations and standards and will not have significant environmental impacts may be authorized by the CPM as a staff approved project modification pursuant to section 1769(a) (2). Once staff files an intention to approve the proposed project modifications, any person may file an objection to staff's determination within 14 days of service on the grounds that the modification does not meet the criteria of section 1769 (a)(2). If a person objects to staff's determination, the petition must be processed as a formal amendment to the decision and must be approved by the full commission at a noticed business meeting or hearing.

Verification Change

A verification may be modified by the CPM without requesting an amendment to the decision if the change does not conflict with the conditions of certification and provides an effective alternate means of verification.

Notification to CPM of a Situation Requiring an Unplanned Response from an Emergency Services Agency (COMPLIANCE 15)

In the event of any incident that requires a response from fire, hazardous materials, medical, or police emergency services (as a result, for example, of personal injury, hazardous materials spill, flood, fire, or explosion, etc), the project owner shall notify the CPM within two hours of the initiation of the event by telephone, fax, or e-mail, to report the circumstances of the event, its current status, and its expected duration.

The project owner shall provide the CPM with all reports that have been prepared regarding any such incident within 10 days of preparation of those documents. This requirement covers any incident reports prepared by the project owner, as well as reports prepared by 3rd parties to which the project owner has access. Such reports shall be unredacted and in their original form.

CBO DELEGATION AND AGENCY COOPERATION

In performing construction and operation monitoring of the project, Energy Commission staff acts as, and has the authority of, the Chief Building Official (CBO). Energy Commission staff may delegate CBO responsibility to either an independent third party contractor or the local building official. Energy Commission staff retains CBO authority when selecting a delegate CBO, including enforcing and interpreting state and local codes, and use of discretion, as necessary, in implementing the various codes and standards.

Energy Commission staff may also seek the cooperation of state, regional, and local agencies that have an interest in environmental protection when conducting project monitoring.

ENFORCEMENT

The Energy Commission's legal authority to enforce the terms and conditions of its Decision is specified in Public Resources Code sections 25534 and 25900. The Energy Commission may amend or revoke the certification for any facility, and may impose a civil penalty for any significant failure to comply with the terms or conditions of the Energy Commission Decision. The specific action and amount of any fines the Energy Commission may impose would take into account the specific circumstances of the incident(s). This would include such factors as the previous compliance history, whether the cause of the incident involves willful disregard of LORS, oversight, unforeseeable events, and other factors the Energy Commission may consider.

NONCOMPLIANCE COMPLAINT PROCEDURES

Any person or agency may file a complaint alleging noncompliance with the conditions of certification. Such a complaint will be subject to review by the Energy Commission pursuant to Title 20, California Code of Regulations, section 1237, but in many instances the noncompliance can be resolved by using the informal dispute resolution process. Both the informal and formal complaint procedure, as described in current State law and regulations, are described below. They shall be followed unless superseded by future law or regulations.

Informal Dispute Resolution Process

The following procedure is designed to informally resolve disputes concerning the interpretation of compliance with the requirements of this compliance plan. The project owner, the Energy Commission, or any other party, including members of the public,

may initiate an informal dispute resolution process. Disputes may pertain to actions or decisions made by any party, including the Energy Commission's delegate agents.

This process may precede the more formal complaint and investigation procedure specified in Title 20, California Code of Regulations, section 1237, but is not intended to be a substitute for, or prerequisite to it. This informal procedure may not be used to change the terms and conditions of certification as approved by the Energy Commission, although the agreed upon resolution may result in a project owner, or in some cases the Energy Commission staff, proposing an amendment.

The process encourages all parties involved in a dispute to discuss the matter and to reach an agreement resolving the dispute. If a dispute cannot be resolved, then the matter must be brought before the full Energy Commission for consideration via the complaint and investigation procedure.

Request for Informal Investigation

Any individual, group, or agency may request the Energy Commission to conduct an informal investigation of alleged noncompliance with the Energy Commission's terms and conditions of certification. All requests for informal investigations shall be made to the designated CPM.

Upon receipt of a request for an informal investigation, the CPM shall promptly notify the project owner of the allegation by telephone and letter. All known and relevant information of the alleged noncompliance shall be provided to the project owner and to the Energy Commission staff. The CPM will evaluate the request and the information to determine if further investigation is necessary. If the CPM finds that further investigation is necessary, the project owner will be asked to promptly investigate the matter. Within seven working days of the CPM's request, provide a written report to the CPM of the results of the investigation, including corrective measures proposed or undertaken. Depending on the urgency of the noncompliance matter, the CPM may conduct a site visit and/or request the project owner to also provide an initial verbal report, within 48 hours.

Request for Informal Meeting

In the event that either the party requesting an investigation or the Energy Commission staff is not satisfied with the project owner's report, investigation of the event, or corrective measures proposed or undertaken, either party may submit a written request to the CPM for a meeting with the project owner. Such request shall be made within 14 days of the project owner's filing of its written report. Upon receipt of such a request, the CPM shall:

1. immediately schedule a meeting with the requesting party and the project owner, to be held at a mutually convenient time and place;

2. secure the attendance of appropriate Energy Commission staff and staff of any other agencies with expertise in the subject area of concern, as necessary;

3. conduct such meeting in an informal and objective manner so as to encourage the voluntary settlement of the dispute in a fair and equitable manner;

4. After the conclusion of such a meeting, promptly prepare and distribute copies to all in attendance and to the project file, a summary memorandum that fairly and accurately identifies the positions of all parties and any understandings reached. If an agreement has not been reached, the CPM shall inform the complainant of the formal complaint process and requirements provided under Title 20, California Code of Regulations, section 1230, et. seq.

Formal Dispute Resolution Procedure-Complaints and Investigations

Any person may file a complaint with the Energy Commission's Dockets Unit alleging noncompliance with a Commission decision adopted pursuant to Public Resources Code section 25500. Requirements for complaint filings and a description of how complaints are processed are in Title 20, California Code of Regulations, section 1237.

KEY EVENTS LIST

PROJECT: _____

DOCKET #: _____

COMPLIANCE PROJECT MANAGER: _____

EVENT DESCRIPTION	DATE
Certification Date	
Obtain Site Control	
Online Date	
POWER PLANT SITE ACTIVITIES	
Start Site Mobilization	
Start Ground Disturbance	
Start Grading	
Start Construction	
Begin Pouring Major Foundation Concrete	
Begin Installation of Major Equipment	
Completion of Installation of Major Equipment	
First Combustion of Gas Turbine	
Obtain Building Occupation Permit	
Start Commercial Operation	
Complete All Construction	
TRANSMISSION LINE ACTIVITIES	
Start T/L Construction	
Synchronization with Grid and Interconnection	
Complete T/L Construction	
FUEL SUPPLY LINE ACTIVITIES	
Start Gas Pipeline Construction and Interconnection	
Complete Gas Pipeline Construction	
WATER SUPPLY LINE ACTIVITIES	
Start Water Supply Line Construction	
Complete Water Supply Line Construction	

CONDITION NUMBER	SUBJECT	DESCRIPTION
COMPLIANCE-1	Unrestricted Access	The project owner shall grant Energy Commission staff and delegate agencies or consultants unrestricted access to the power plant site.
COMPLIANCE-2	Compliance Record	The project owner shall maintain project files on-site. Energy Commission staff and delegate agencies shall be given unrestricted access to the files.
COMPLIANCE-3	Compliance Verification Submittals	The project owner is responsible for the delivery and content of all verification submittals to the CPM, whether such condition was satisfied by work performed or the project owner or his agent.
COMPLIANCE-4	Pre-construction Matrix and Tasks Prior to Start of Construction	Construction shall not commence until the all of the following activities/submittals have been completed: • property owners living within one mile of the project have been notified of a telephone number to contact for questions, complaints or concerns, • a pre-construction matrix has been submitted identifying only those conditions that must be fulfilled before the start of construction, • all pre-construction conditions have been complied with, • the CPM has issued a letter to the project owner authorizing construction.
COMPLIANCE-5	Compliance Matrix	The project owner shall submit a compliance matrix (in a spreadsheet format) with each monthly and annual compliance report which includes the status of all compliance conditions of certification.
COMPLIANCE-6	Monthly Compliance Report including a Key Events List	During construction, the project owner shall submit Monthly Compliance Reports (MCRs) which include specific information. The first MCR is due the month following the Energy Commission business meeting date on which the project was approved and shall include an initial list of dates for each of the events identified on the Key Events List.
COMPLIANCE-7	Annual Compliance Reports	After construction ends and throughout the life of the project, the project owner shall submit Annual Compliance Reports instead of Monthly Compliance Reports.

CONDITION NUMBER	SUBJECT	DESCRIPTION
COMPLIANCE-8	Confidential Information	Any information the project owner deems confidential shall be submitted to the Energy Commission's Executive Director with a request for confidentiality.
COMPLIANCE-9	Annual fees	Payment of Annual Energy Facility Compliance Fee
COMPLIANCE-10	Reporting of Complaints, Notices and Citations	Within 10 days of receipt, the project owner shall report to the CPM, all notices, complaints, and citations.
COMPLIANCE-11	Planned Facility Closure	The project owner shall submit a closure plan to the CPM at least 12 months prior to commencement of a planned closure.
COMPLIANCE-12	Unplanned Temporary Facility Closure	To ensure that public health and safety and the environment are protected in the event of an unplanned temporary closure, the project owner shall submit an on-site contingency plan no less than 60 days prior to commencement of commercial operation.
COMPLIANCE-13	Unplanned Permanent Facility Closure	To ensure that public health and safety and the environment are protected in the event of an unplanned permanent closure, the project owner shall submit an on-site contingency plan no less than 60 days prior to commencement of commercial operation.
COMPLIANCE-14	Post-certification changes to the Decision	The project owner must petition the Energy Commission to delete or change a condition of certification, modify the project design or operational requirements and/or transfer ownership of operational control of the facility.
COMPLIANCE-15	Notification to CPM of Unplanned Response from Emergency Services	The project owner shall notify the CPM within two hours to report the circumstances of the event. The project owner shall provide the CPM with all unredacted, original form reports that have been prepared regarding any such incident within 10 days of preparation of those documents.

ATTACHMENT A
COMPLAINT REPORT/RESOLUTION FORM

COMPLAINT LOG NUMBER:_____ DOCKET NUMBER:_____

PROJECT NAME:_____

NAME:_____ PHONE NUMBER:_____

ADDRESS:_____

COMPLAINANT INFORMATION

DATE COMPLAINT RECEIVED:_____ TIME COMPLAINT RECEIVED:_____

COMPLAINT RECEIVED BY: ☐ TELEPHONE ☐ IN WRITING (COPY ATTACHED)

DATE OF FIRST OCCURRENCE:_____

DESCRIPTION OF COMPLAINT (INCLUDING DATES, FREQUENCY, AND DURATION):_____

FINDINGS OF INVESTIGATION BY PLANT PERSONNEL:_____

DOES COMPLAINT RELATE TO VIOLATION OF A CEC REQUIREMENT? ☐ YES ☐ NO

DATE COMPLAINANT CONTACTED TO DISCUSS FINDINGS:_____

DESCRIPTION OF CORRECTIVE MEASURES TAKEN OR OTHER COMPLAINT RESOLUTION:_____

DOES COMPLAINANT AGREE WITH PROPOSED RESOLUTION? ☐ YES ☐ NO

IF NOT, EXPLAIN:_____

COMPLAINTCORRECTIVE ACTION

IF CORRECTIVE ACTION NECESSARY, DATE COMPLETED:_____

DATE FIRST LETTER SENT TO COMPLAINANT (COPY ATTACHED):_____

DATE FINAL LETTER SENT TO COMPLAINANT (COPY ATTACHED):_____

OTHER RELEVANT INFORMATION:_____

"This information is certified to be correct."

PLANT MANAGER SIGNATURE:_____ DATE:_____

(ATTACH ADDITIONAL PAGES AND ALL SUPPORTING DOCUMENTATION, AS REQUIRED)

PIO PICO ENERGY CENTER
(11-AFC01)
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Executive Summary ..... Eric K. Solorio
Introduction ..... Eric K. Solorio
Project Description ..... Eric K. Solorio
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Cultural Resources ..... Sarah M. Allred
Hazardous Materials Management ..... Geoff Lesh, P.E., Rick Tyler
Land Use ..... Candace M. Hill
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Transmission Line Safety and Nuisance ..... Obed Odoemelam, Ph.D.
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Facility Design ..... Shahab Khoshmashrab
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Power Plant Reliability ..... Shahab Khoshmashrab
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BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
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APPLICATION FOR CERTIFICATION
FOR THE *PIO PICO ENERGY CENTER PROJECT*

Docket No. 11-AFC-1
PROOF OF SERVICE
(*Revised 2/21/2012*)

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*indicates change